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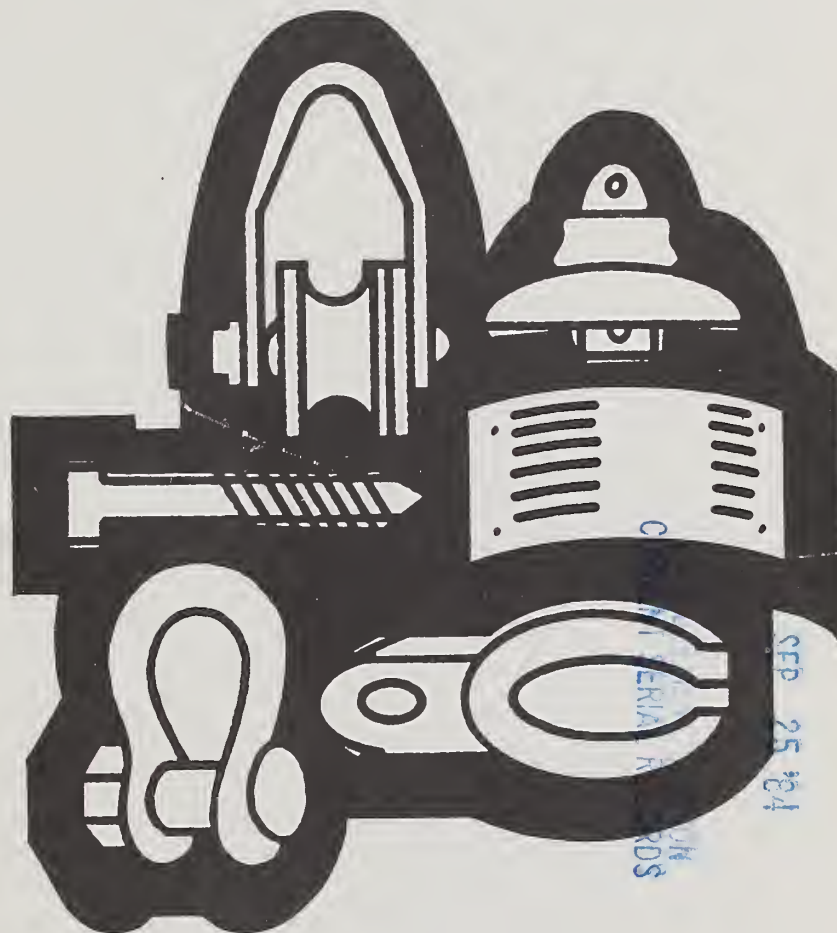
Rural  
Electrification  
Administration

REA  
Bulletin  
43-5

# List of Materials

Acceptable for Use on Systems  
of REA Electrification Borrowers

July 1984



SEP 25 1984  
U.S. D. A.  
WILLIAM L. P. R. A.  
RECEIVED

PREFACE

This list supersedes all preceding issues including revisions. Revised sheets reflecting changes in the list will be issued quarterly and should be inserted in order to keep your copy up to date.

The items shown in this publication include materials and equipment for transmission and distribution facilities and specific items of electric general plant. Items not listed include office equipment, tools and work equipment, and consumer owned wiring facilities. The listings apply only to new items of material and equipment and not to used items.

In addition to items accepted on a general basis, this list also includes items accepted on a conditional basis. As one of the conditions in the listing of an item on a conditional basis, contractors are required to obtain the borrower's concurrence prior to its use.

The acceptance of an additional item or the deletion of an existing item is a function of the Technical Standards Committees. Any manufacturer desiring to have a new item placed on the list, or any user believing an existing item should be removed from the list, is invited to submit the matter to the Committees. Any communication calling attention to an error or omission in the list, such as a wrong catalog number, an obsolete item, etc., will be appreciated. All communications should be addressed to Technical Standards Committee "A" (Electric), Rural Electrification Administration, U.S. Department of Agriculture, Washington, D.C. 20250.



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## INDEX - PART III

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a - Insulator, pin type

Specifications

5 kV - used on 2.4 kV and  
2.4/4.16 kV systems



	Plain	Radio- freed
ANSI Class 55-2		
Flashover, dry	50 kV	45 kV
Flashover, wet	25 kV	25 kV
Leakage distance	5 in.	5 in.
Pinhole diameter	1 in.	1 in.

Chance	C905-1302*
Brown Boveri Elec. (ITE)	8
**McGraw-Edison	NP8D8*
Ohio Brass	12847
Porcelain Products (Knox)	253

7.2/12.5 kV - used on 7.2/12.5  
and 7.62/13.2 kV systems



	Plain	Radio- freed
ANSI Class 55-3		
Flashover, dry	65 kV	55 kV
Flashover, wet	35 kV	30 kV
Leakage distance	7 in.	7 in.
Pinhole diameter	1 in.	1 in.

Chance	C905-1303*
Brown Boveri Elec. (ITE)	5*
Joslyn (Pinco)	L63R*
McGraw-Edison	NP9D8*
Ohio Brass	38148*
Porcelain Products (Knox)	261-S*

15 kV - used on 7.2/12.5  
and 7.62/13.2 kV systems where  
greater insulation is needed



	Plain	Radio- freed
ANSI Class 55-4		
Flashover, dry	70 kV	65 kV
Flashover, wet	40 kV	35 kV
Leakage distance	9 in.	9 in.
Pinhole diameter	1 in.	1 in.

Chance	C905-1304*
Brown Boveri Elec. (ITE)	6*
Joslyn (Pinco)	L2064R*
McGraw-Edison	NP21D8*
Ohio Brass	38149*
Porcelain Products (Knox)	366-S*

\*Radio-freed

\*\*Available in white as indication of neutral. White insulators are non-radio-freed.

Radio-freed and non-radio-freed insulators made by these manufacturers and in these styles are acceptable.

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

a - Insulator, pin type  
(Radio-free)

Specifications

Used on 14.4/24.9 kV  
distribution lines.

Radio noise free, metal  
thimble



ANSI Class 56-1  
Flashover, dry 95 kV  
Flashover, wet 60 kV  
Leakage distance 13 in.  
Pinhole diameter 1-3/8 in.

Chance	C906-1311
Brown Boveri Elec. (ITE)	127-R
Joslyn (Pinco)	L1123-R
Ohio Brass	38246-7010
Porcelain Products (Knox)	2027-S

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Used on 33 - 34.5 kV  
transmission lines.

Metal thimble



ANSI Class 56-3  
Flashover, dry 125 kV  
Flashover, wet 80 kV  
Leakage distance 21 in.  
Pinhole diameter 1-3/8 in.

Chance	C906-1303
Brown Boveri Elec. (ITE)	245-R
Joslyn (Pinco)	L75-R
Ohio Brass	38223-7010
Porcelain Products (Knox)	2045-S

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Used on 44 - 46 kV  
transmission lines.

Metal thimble.



ANSI Class 56-4  
Flashover, dry-wet 140-95 kV  
Leakage distance 27 in.  
Pinhole diameter 1-3/8 in.

Brown Boveri Elec. (ITE)	225-R
Ohio Brass	38255-7010

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

Conditional List  
a(1)  
July 1984

a - Insulators, pin type  
(Radio-freed)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
*Brown Boveri Electric 27R 24.9/14.4 kV ANSI Class 56-1	1235 5/27/82	To obtain experience.
*Chance C906-1321 24.9/14.4 kV ANSI Class 56-1	1274 2/9/84	To obtain experience.
*McGraw-Edison NP2T8 24.9/14.4 kV ANSI Class 56-1	1205 2/5/81	To obtain experience.

\*Does not have metal thimble.

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

b  
July 1984

b - Pin, pole top, steel

DISTRIBUTION

	<u>7.2/12.5 or 7.62/13.2 kV</u>	<u>14.4/24.9 kV</u>
Pin length, inches :	20	20
Thread diameter, inches:	1	1-3/8
Hole spacing, inches :	8	8
REA Specifications :	D-3	DT-3
Chance	2199	2195
Dixie	D-2172	D2195
Joslyn	J740	J720
Kortick		K8086
McGraw-Edison	DP19P6	DP19P5
Utilities Service	36606F-REA	36652

Pins listed below have 4-1/2" offset  
which eliminates the use of Item cs

Joslyn	J25179
McGraw-Edison	DP28P1
Utilities Service	36549

TRANSMISSION

Type :	1-1/8" solid steel	Channel
Pin length, inches :	24	24
Thread diameter, inches:	1-3/8	1-3/8
Hole spacing, inches :	8	8
REA Specifications :	None	DT-3
Chance		2196
Dixie	D2125	
Joslyn		J824
Kortick		K8087
McGraw-Edison		DP19P8
Utilities Service		36653F

NOTE 1. Pole top bracket (Item eb) and post insulator (Item ea) may be substituted for pole top pin (Item b) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

2. Flared type pins may be mounted with either side against the pole.

c - Bolt, machine

Applicable Specification: ANSI C135.1, "Standards for Galvanized Steel Bolts and Nuts," except that the lengths are in the ranges given below.

Applicable Sizes : 1/2 inch diameter, 6 through 10 inch length  
5/8 inch diameter, 6 through 24 inch length  
3/4 inch diameter, 6 through 26 inch length  
7/8 inch diameter, 6 through 28 inch length

The following manufacturers have shown compliance with the applicable specifications for machine bolts:

A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Hughes Brothers  
\*Joslyn Manufacturing Company  
Kortick Manufacturing Company  
\*McGraw-Edison  
\*Portland Bolt & Manufacturing Company  
Steel City Bolt & Screw Co., Inc.  
Utilities Service Company



\*"Static proof" design available.



d  
July 1984

d - Washers  
Flat Steel

Size, inches:	2 x 2	3 x 3	4 x 4	4 x 4	1-3/8 round	1-3/4 round
Thickness, in.:	3/16		3/16		12 gauge	10 gauge
Hole Diam., in.:	13/16	13/16	13/16	13/16	9/16	11/16
C & C Spacer	4					
Chance	6814	6817	6818	6819	6803	6805
Dixie	D6814	D6817	D6818	D6819	D6803	-
Hughes	SW2 -70	SW3-70	SW4-70	SW4-70 ( )	RW1-3/8-50	-
Joslyn	J1076	J22596	J1080	J1473	J1086	-
Kortick	K1553	K1555	L1557	K1559	K1524	K1525
McGraw-Edison	DF2W5	DF2W7	DF2W10	DF2W15	DF1W2	DF1W3
Power Line						
Hardware	SWF225A	SWF33B	SWF44A	-	-	-
Utilities						
Service	5485	5487A	5488	5490A	5478	5479

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Size, inches:	2 x 2	3 x 3	3 x 4	4 x 4	3 round
Thickness, in.:		5/16	7/16		3/16
Hole Diam., in.:	11/16	11/16	15/16	13/16	13/16 (spurred)
Barron Bethea (Nodular Iron)	GCW-1A* BB-214	GCW-31*	CRW-4A*	GCW-41*	-
Bethea Metals (Aluminum Alloy)	C-103*	C-105*	C-106*	C-108*	-
Bethea Hardware (Aluminum Alloy)	-	WC-33-5*	WC-34-7*	WC-44-6*	-
Continental (Nodular Iron)	-	CW-33-5*	CW-34-7*	CW-44-6*	TCSF-30-6
Flagg (MIF) (Malleable Iron)	P141* P56A	P143*	P120*	P144*	PX159A
Joslyn (Steel)	-	J114*	-	-	-
Power Line Hardware	-	CSW-33*	CRW-34*	CSW-44*	-
Universal Electric (Aluminum Alloy)	UW-225*	UW-335*	UW-347*	UW-446*	-

\*Curved



f - Pin, crossarm  
(With square washer, nut and MF locknut)

DISTRIBUTION

Thread (inches diam.)	1	1-3/8	1	1-3/8
Length above base (in.)	5	7	5	7
Length below base (in.)	5-3/4	7	1-1/2	1-3/4
Shank (inches diam.)	5/8	5/8	5/8	3/4
	<u>Long Shank</u>		<u>Short Shank</u>	
Chance	881	4717	886	-
Dixie	D881	-	-	-
Joslyn	J203*	J647*	J221*	J630*
Kortick	K7104	K7611	K7122	K7631
McGraw-Edison	DP2S1*	DP3T1*	DP2S37*	DP5T22*
Utilities Service	558	3137A	579	3142

Clamp type pin

Thread (inches diam.)	1	1-3/8
Length above base (in.)	5-3/4	7
Chance	14322	14322-1
Dixie	D3322	D3324
Joslyn	J3322	J3324
McGraw-Edison	DP2C1	DP2C11



Washer plate for clamp type pin

These plates are equipped with lugs to prevent slippage of pin along crossarm. They may be used to replace the bottom plate on pins already installed.

Chance	450091
Joslyn	J3322-P
McGraw-Edison	DP9X1

\*"Static proof" designs available.

f - Pin, crossarm  
(With square washer, nut and locknut)

TRANSMISSION

Thread (inches diameter)	1-3/8	1-3/8
Length above base (inches)	10	10
Length below base (inches)	7	1-3/4
Shank (inches diameter)	3/4	3/4
	<u>Long Shank</u>	<u>Short Shank</u>
Chance	4332	-
Joslyn	J610*	J633*
Kortick	K7643	K7635
McGraw-Edison	DP7T9*	DP5T24*
Utilities Service	3140	3145

\* "Static proof" designs available.

g - Crossarms

Applicable Specification: REA Specification DT-5B:PE-16 for Wood Crossarms (Solid and Laminated), Transmission Timbers and Pole Keys.

Crossarm Manufacturing and Treating

Firms listed below have acceptable facilities for manufacture and treatment of crossarms or may have their crossarms treated at any one of the plants listed in the sections g or zz.

<u>Company</u>	<u>Plant Location</u>
American Creosote Works	Jackson, Tennessee
American Crossarm Company	Whitehouse, Florida
American Crossarm & Conduit Company	Chehalis, Washington (1)
Anthony Forest Products	El Dorado, Arkansas (2) (3)
Atlantic Wood Industries, Inc.	Fruitland, Maryland
Brooks Lumber Company	Bellingham, Washington (1)
Conroe Creosoting Company	Conroe, Texas
Dis-Tran, Inc.	Alexandria, Louisiana
Cascadian Company, Inc.	Eugene, Oregon (3)
Crown Zellerbach	Gulfport, Mississippi
R. G. Haley International Corp.	Bellingham, Washington
Hatheway-Patterson Corp.	Houston, Texas
Hughes Brothers	Seward, Nebraska (1)
International Paper Company	DeRidder, Louisiana
Koppers Company	Gainesville, Florida
	Morrisville, N. C. (2) (3)
Langdale Company	Valdosta, Georgia
Lockhart Company	Lockhart, Alabama
Wm. C. Meredith Company	Atlanta, Georgia
Moss-American, Inc.	Meridian, Mississippi
Neidermeyer-Martin Company	Ridgefield, Washington (1)
(Pacific Wood Treating Corp.)	
Pennington West Coast Sales Company	Eugene, Oregon (3) (1)
Plantation Wood Products, Inc.	Albany, Georgia
Southern Wood Piedmont Co.	East Point, Georgia
	Spartanburg, South Carolina
Structural Wood Systems	Greenville, Alabama (2) (3)
John C. Taylor Lumber Sales, Inc.	Sheridan, Oregon
Texas Tie & Timber Sales, Inc.	Denison, Texas
(W. J. Smith Wood Preserving Company)	
Utility Structures Engineering, Inc.	Fresno, California (2) (3)
Weekly Lumber Company	Rockledge, Florida
	Tampa, Florida
Wyckoff Lumber Company	Seattle, Washington

- (1) Laminated & solid sawn.
  - (2) Laminated only.
  - (3) Crossarm manufacturing only.
- No number indicates solid sawn only.

g - Crossarms

Crossarm Treating Only

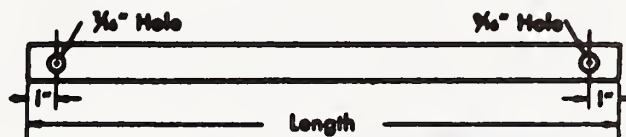
Firms listed below have acceptable crossarm treating facilities, but do not manufacture crossarms or treat poles.

<u>Company</u>	<u>Plant Location</u>
Casswood Treated Products Company	Beardstown, Illinois
Coleman Evans Wood Preserving Company	Whitehouse, Florida
Fordyce Wood Treaters, Inc.	Fordyce, Arkansas

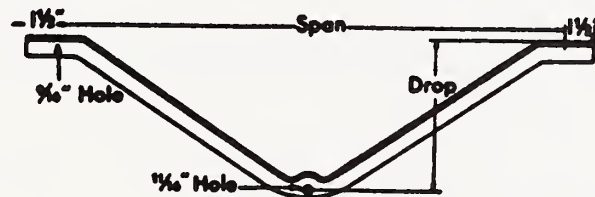
h - Brace, crossarm, steel

Size (inches)	$1\frac{1}{4} \times \frac{1}{4}$	$1\frac{1}{2}$ angle x 3/16
Style	Flat	Bow
Centers (inches)	26	60
Length (inches)	28	-
Drop (inches)	-	18

Chance	7128	6942
Dixie	D7128	D6942
Hughes Brothers	2809.5	-
Joslyn	J7128	J1508
Kortick	K1428	K1805
McGraw-Edison	DB2F5	DB1L5
Utilities Service	5243	5217



Flat Brace



Bow Brace

NOTE: The braces listed on this page may, at the borrower's option, be substituted for wood braces, Item cu, specified on 7.2/12.5 kV drawings. They may not be used for 14.4/24.9 kV construction.

i - Bolt, carriage

Applicable Specification: ANSI C135.1, "Standards for  
Galvanized Steel Bolts and  
Nuts."

Applicable Sizes : 3/8 inch diameter, 3 through  
6 inch length

1/2 inch diameter, 3 through  
6 inch length

The following manufacturers have shown compliance with the applicable  
specifications for carriage bolts:

A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Hughes Brothers  
Joslyn Manufacturing Company  
Kortick Manufacturing Company  
McGraw-Edison  
Utilities Service Company





July 1984

## j - Screw, lag

Applicable Specifications: Edison Electric Institute  
Specification TDJ-3 1964,  
"Standards for Lag Screws"

Applicable Sizes : 1/2 inch diameter, 4 inch length  
1/2 inch diameter, 5 inch length  
5/8 inch diameter, 4 inch length  
5/8 inch diameter, 5 inch length

The following manufacturers have shown compliance with the applicable specifications for lag screws:

A. B. Chance Company  
Dixie Electrical Manufacturing Company

Joslyn Manufacturing and Supply Company  
Kortick Manufacturing Company  
McGraw-Edison

Utilities Service Company





k - Insulators, suspension

ANSI Class Type	52-9 Clevis	52-1 Clevis	52-4 Clevis	52-3 Ball & Socket
Disc Diameter	4 $\frac{1}{8}$ "	6"	9" or 9 $\frac{1}{2}$ "	9" or 9 $\frac{1}{2}$ "
M & E Rating, lbs.	10,000	10,000	15,000	15,000
Leakage, inches	6-3/4	7	11 $\frac{1}{2}$	11 $\frac{1}{2}$
Flashover, kV: Dry-Wet	60 - 30	60 - 30	80 - 50	80 - 50
NOTES	(3)(4)(6)	(3)(4)	(5)	(2)

<u>Manufacturer</u>	<u>Catalog Number</u>			
Chance	C907-1210	C907-1001 (6)	-	-
Brown Boveri Elec.(ITE)	877/817	804 (6)	-	-
Joslyn (Pinco)	L1814	L1510	L-970	L-960
Lapp	6815-G70	6605	9100	9000
Locke	16044	16583	15S410	15S409
Ohio Brass	42399	32433	48019	48008
Porcelain Prod. (Knox)	84300	86012	-	-
Sediver	CT-4R2	-	-	-

Notes:

- (2) To be used only on transmission lines.
- (3) To be used only on distribution lines.
- (4) Use two insulators for 7.2/12.5 kV deadends and three insulators for 14.4/24.9 kV deadends.
- (5) Use two insulators for 14.4/24.9 kV deadends.
- (6) Either malleable iron, steel or aluminum hardware is acceptable.

k - Insulators, suspension

ANSI Class Type	52-3 Ball & Socket	52-4 Clevis	52-5 Ball & Socket	52-6 Clevis
Disc Diameter	10"	10"	10"	10"
M & E Rating, lbs.	15,000	15,000	25,000	25,000
Leakage, inches	11½	11½	11	11
Flashover; kV; Dry-Wet	80 - 50	80 - 50	80 - 50	80 - 50
NOTES	(2)	(1)	(2)	

Manufacturer

Catalog Number

Joslyn (Pinco)	L1060	L1070	L1500	L1570
Lapp	8200	8100	301425	2300
Locke	20S840	20S580	30S255	30S257
Ohio Brass	32440	32439	47410	47415
Porcelain Prod. (Knox)	81022	81012	-	-
Sediver		CT-6R2		

Notes: (1) Use two for 14.4/24.9 kV deadends.  
(2) To be used only on transmission lines.



## Conditional List

k(2)

July 1984

## k - Insulator, Suspension

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Sediver</u>		
10" suspension insulator	997(7/27/72)	To obtain experience,
N-6R2 (ball & socket, 15,000 lbs.)	1068(6/26/75)	
CT-12R2 (clevis, 25,000 lbs.)	1186(5/8/80)	Same as above
N-12R2 (ball & socket, 25,000 lbs.)	1175(11/2/79)	

k - Insulator, Distribution Deadend

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
Distribution deadend	965	For the purpose of gaining operating experience as follows: 1. For distribution lines only. 2. Recommended maximum working load is 5000 lbs. 3. Not recommended for use in areas subject to contamination.
Catalog No. C654-0000	4/22/71	
"Epoxilator II"		
(15 kV line-to-line)	1082	
Catalog No. C654-2500	1/22/76	
"Epoxilator II"	1129	
(25 kV line-to-line)	12/15/77	
<u>Joslyn</u>		
Distribution deadend	1074	1. For distribution lines only, up to 15 kV line-to-line voltage.
UDI 671-3002	9/25/75	
	1088	
	4/15/76	
Distribution deadend	1074	1. For distribution lines only, up to 25 kV line-to-line voltage.
UDI 671-3010	9/25/75	
	1088	
	4/15/76	
<u>Lapp</u>	1282	
Distribution deadend	6/21/84	1. For distribution lines only. 2. To be used only in a horizontal position on deadends. 3. Maximum working load to be 5000 lbs. 4. Not recommended to be used in areas subject to contamination.
Catalog No. 151001, 15 kV		
Catalog No. 151002, 25 kV		
<u>Plastigage</u>		
Distribution deadend	1158	1. For distribution lines only. 2. To obtain experience. 3. Not recommended to be used in areas subject to contamination.
H-15 kV-4	3/1/79	
H-25 kV 6	1208	
	3/19/81	
<u>Salisbury</u>		
Distribution deadend	1226	Same as Lapp.
Catalog No. 9501, 15 kV	1/7/82	
Catalog No. 9502, 25 kV		

NOTE: When insulators from this page are used, adjust construction drawing material list quantities as necessary.

1-1  
July 1984

1 - Clamp, deadend

DISTRIBUTION

Copper 2 through 6 CWC 4A through 8A		ACSR (Aluminum Clamps)			
		4/0 & 3/0	2/0	1/0	2 & 4
-	ALCOA	302	302	302	302
-	American Connector Engineering	QDA-63	QDA-53	QDA-53	QDA-53
MD-52-N	Anderson/ Sq.D	PG57N	PG57	PG-46N	PG-46N
-	Bethea Hardware	DA-20N	DA-15-N	DA-15-N	DA-15-N
-	Continental	AQD-63	AQD-52	AQD-52	AQD-52
-	C & R	CR-20-90	CR-10-90	CR-10-90	CR-10-90
2111	Joslyn	BT5210	J25392	J25389	J25389
2111	Knox	5210			
-	Lapp	306120N	306118N	306118N	306118N
80500	Ohio Brass	89237	86534	86534	86534

1 - Deadend for Steel Strand (Overhead Ground Wire)

TRANSMISSION

For High Strength Steel Strand and Aluminum-Clad Steel Strand

Clamp Type

<u>High Strength Steel</u>		<u>Aluminum-Clad Steel</u>		
<u>Manufacturer</u>	<u>3/8" and 7/16"</u>	<u>7 No. 9 AWG</u>	<u>7 No. 8 AWG</u>	<u>7 No. 7 AWG</u>
Anderson/Sq. D	SWDE-55N			
Bethea Hardware	FD-550-N (For use on 3/8" steel strand only)			
Ohio Brass	80437			

1 - Deadend for steel strand (overhead ground wire)

TRANSMISSION

For high strength, extra high strength steel strand and aluminum clad steel strand

Compression Type

<u>Manufacturer</u>	<u>High Strength Steel</u>		<u>Aluminum-clad steel</u>		<u>Extra High Strength</u>	
	<u>3/8"</u>	<u>7/16"</u>	<u>7 No. 9 AWG</u>	<u>7 No. 8 AWG</u>	<u>5/16"</u>	<u>3/8"</u>
Fargo	82S712	82S714	82A79	82A78	82S710	82S712 82S714
Alcoa	4620.12	4627.14				
Burndy	YTW375E	YTW438E	YTW7M9T	YTW7M8T	YTW7M7T	
Homac	Order by wire size and type.					

Formed Type\*

	<u>Formed Type*</u>	
	<u>16M-AWTLG</u>	<u>20M-AWTLG</u>
Chance		
Helical Line Prod.	HG210-3/8 HG211-7/16 HG523-12.5M HG525-16M	HG209-5/16 HG210-3/8 HG211-7/16 HG528-20M

\* Class B galvanizing. When overhead groundwire has Class C galvanizing, formed deadend should also have Class C galvanizing.

Automatic Type

	<u>Automatic Type</u>	
	<u>GDE-302</u>	<u>GDE-303</u>
Fargo	GDE-302	GDE-301 GDE-302 GDE-303
Reliable	5202	5201 5202 5203



July 1984

## 1 - Clamp, deadend

DISTRIBUTION

## 2-Bolt Straight Line, Aluminum Alloy

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>*Barron Beth</u> Aluminum alloy deadend Catalog No. SDF-10A (4 through 4/0 ACSR)	871 7/6/67	(a) To obtain experience. (b) Applications limited to replacements under hot line conditions.
<u>*Fargo</u> Aluminum alloy deadend Catalog No. GD-961A side opening keeper (No. 4 and No. 2 ACSR) Catalog No. GD-972A (2/0, 3/0, 4/0 ACSR)	1258 5/5/83 1144 8/3/78 791 4/30/64	Same as above.
<u>*C &amp; R Products</u> Aluminum alloy deadend Catalog No. CR-15-180 (No. 2 and No. 4 ACSR)	918 5/15/69	Same as above.
<u>*Bethea Hardware</u> Aluminum alloy deadend Catalog No. ASO-684-2 (1/0, 2/0, 3/0 ACSR) Catalog No. ASD-2-N (4-2/0 ACSR) Catalog No. ASD-34-N (3/0, 4/0 ACSR)	961 2/18/71 1201 12/4/80	Same as above. Same as above.
<u>*Anderson/Square D</u> Aluminum alloy deadend Catalog No. ADS-48-N (2/0 ACSR) Catalog No. ADS-60-N (3/0 ACSR)	1130 1/5/78 1148 9/28/78	Same as above.
<u>*Continental</u> Aluminum Alloy deadend Catalog No. HDSO-57 (with side opening) (4-4/0 ACSR) Catalog No. SGA-52-23 (4-2/0 ACSR) Catalog No. SGA-60 (3/0-4/0 ACSR)	1244 10/7/82	Same as above.

\*Straight line deadend clamps are applicable for urban construction where tensions are moderate and on lines often worked hot.

Conditional List

1(1.1)

July 1984

1 - Clamp, deadend

DISTRIBUTION

2-Bolt Straight Line, Aluminum Alloy

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
*Burndy Aluminum alloy deadend Catalog No. CUW26RE-1 #2-2/0 Str. Aluminum #4-2/0 ACSR	A1255 3/24/83	(a) To obtain experience. (b) Applications limited to replacement under hot line conditions.

\*Straight line deadend clamps are applicable for urban construction where tensions are moderate and on lines often worked hot.

m - Clamp, suspension

2 BOLT - DISTRIBUTION

	<u>Copper &amp; CWC</u>	<u>ACSR with 4</u>	<u>Straight or 2</u>	<u>Formed 1/0 &amp; 2/0</u>	<u>Armor Rods 3/0 &amp; 4/0</u>
Anderson/Square D	MS-46-N	MS-60-N	MS-70-N	HAS-85-N	HAS-104-N
Barron Bethea	FWG-1	FWG-2	FWG-3	FWG-4	-
Bethea Hardware	FS-46-N	GW-1-N	LS-0-N	LS-1-N	LS-2-N
C & R Products	-	-	-	CRSC-1	CRSC-2
Continental Electric	FSC-46-N	FSC-60-N	SC-70-N	SC-85-N	SC-105-N
Dulmison	-	-	-	-	AGS*
Brown Boveri Elec. (ITE)	6240	6241	6242	6243	6244
Joslyn (Brewer-Titchener)	6240	6241	6242	6243	6244
Knox	6240A-U	6241A-U	6242A-U	6243A-U	6244A-U
Lapp	305740N	306027N	306028N	306029N	306030N
Ohio Brass	83044	83064	83074	83084	83104
Preformed	-	-	-	-	AGS*

\*Accepted for larger sizes.

m-2  
July 1984

m - Clamp, Suspension

ANGLE - DISTRIBUTION  
No. 2 & 4 ACSR  
Plus Rods

2-BOLT TRANSMISSION  
For 3/8" Steel Overhead  
Ground Wire

AAC-68-90	Anderson/Square D	MS-46-N
-	Barron Bethea	FGW-1
RALS-1	Bethea Hardware	FS-46-N
AC-75	Continental	FSC-46N
GD-907A	Fargo	-
2300	Brown Boveri Electric (ITE)	6240
2300	Joslyn (Brewer-Titchener)	6240
2300	Knox	6240A-U
306092	Lapp	305740N
82860	Ohio Brass	83044
AC-1660	Power Line Hardware	-

n  
July 1984

n - Bolt, double arming

Applicable Specification: ANSI C135.1, "Standards for  
Galvanized Steel Bolts and  
Nuts."

Applicable Sizes : 5/8 inch diameter, 12 inch  
through 24 inch length

3/4 inch diameter, 20 inch  
through 24 inch length

The following manufacturers have shown compliance with the applicable  
specifications for double arming bolts:

A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Hughes Brothers  
\*Joslyn Manufacturing and Supply Company  
Kortick Manufacturing Company  
\*McGraw-Edison  
Portland Bolt & Manufacturing Company  
Steel City Bolt & Screw Co., Inc.  
Utilities Service Company



\*"Static proof" designs available.

o - Bolt, eye, oval

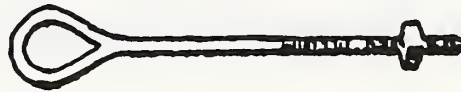
Applicable Specification: ANSI C135.4, "Standards for Galvanized Ferrous Eye Bolts and Nuts for Overhead Line Construction."

Applicable Sizes : 5/8 inch diameter, 6 inch through 20 inch length  
3/4 inch diameter, 8 inch through 20 inch length

The following manufacturers have shown compliance with the applicable specifications for oval eye bolts:

Berny's Forging Company  
A. B. Chance Company  
Dixie Electrical Manufacturing Company  
\*Joslyn Manufacturing Company  
Kortick Manufacturing Company  
\*McGraw-Edison  
Utilities Service Company

\*"Static proof" designs available.



Shoulder Eye Bolt  
for Transmission Structures

3/4 inch diameter, 8 inch through 20 inch length

	<u>Catalog Number</u>
Joslyn	J9528 to J9540
Kortick	K9558 to K2570
McGraw-Edison	DF10E8 thru DF10E20



p - Connectors, Distribution (Parallel Groove)

Applicable Specification, "REA Specification for Connectors," DT-8

	ACSR to ACSR To same size or smaller Bare Conductor				
	4/0 - 2/0	1/0	2	4	
Alcoa	190	396.6	490.0	490.0	
Anderson/Sq. D	LC-53A	LC-51C	LC-51A	LC-51A	
Bethea Hardware	APG-3	APG-2	APG-1	APG-1	
Blackburn	PAE 414 1-9	PAE 212 1-9	PAE 212 1-9	PAE 212 1-9	
Burndy	KVS 28A	UCG25R	UC25R 2R	UC25R 2R	
Fargo	GA-614	GA-620	GA-620	GA-620	
Joslyn	6053	6052	6052	6052	
Penn-Union	PCAA-20BF	PCAA-15BF	PCAA-10BF	PCAA-10BF	
Reliable	6053	6052	6052	6052	
Weaver	NICA12	NICA60	NICA2	NICA2	
	Over Armor Rods				
	3/0	2/0	1/0	2	4
Alcoa	200	R196	R196	R196	198
Anderson/Sq. D	LC-83A	LC-52C	LC-52C	LC-52C	LC-52C
Blackburn	-	-	PAA10	PAA10	PAA10
Burndy	-	-	UC32R	UC32R	UC32R
Fargo	GA-9843	GA-9842	GA-616	GA-616	GA-616
Joslyn	-	-	744AL	600AL	600AL
Penn-Union	-	-	ARC-12	ARC-11	ARC-14
Reliable	-	-	744AL	600AL	600AL
Weaver	-	-	NICR60	NICR60	NICR60

p - Connectors, Distribution (Parallel Groove)

Applicable Specification: "REA Specification for Connectors," DT-8

ACSR to Copper or Copperweld-Copper

ACSR Size (Bare Conductor)

	3/0	2/0	1/0	2	4
Alcoa	197	R193	R193	195	195
Anderson/Sq. D	LC-811A	LC-811A	LC-522A	LC-511A	LC-511A
Blackburn	PAC7	PAC7	PAC4	2CA	4CA
Fargo	GA-616C	GA-616C	GA-620C	GA-620C	GA-620C
Joslyn	600ALC	555ALC	438ALC	438ALC	438ALC
Reliable	600ALC	555ALC	438ALC	438ALC	438ALC
Weaver	-	-	-	2WCA	2WCA

ACSR Size (Over Armor Rods)

	3/0	2/0	1/0	2	4
Alcoa	201	R197	R197	R197	199
Anderson/Sq. D	LC-833	LC-833	LC-811A	LC-811A	LC-811
Blackburn	-	-	PAC7	PAC7	PAC7
Fargo	GA-9843C	GA-9842C	GA-616C	GA-616C	GA-616C
Joslyn	-	-	744ALC	600ALC	600ALC
Reliable	-	-	744ALC	600ALC	600ALC

p - Connectors, Distribution

Applicable Specification: "REA Specification for Connectors," DT-8

Copper Type Conductors  
Connections to same size or smaller

C'Weld Copper Copper	2A 0x7	2x3	4A	6A 4	8A 6
<u>Bare Conductor</u>					
Anderson/Sq. D	DG-1 /0	DG-1	DG-2	DG-4	DG-6
(s) Blackburn	RT11	RT02	RT02	RT04	RT06
(s) Burndy	KS-25	KS-23	KS-23	KS-20	KS-17
(s) Dossert	DS-10-F	DS-6-F	DS-6-F	DS-3-F	DS-2-F
Fargo	GC-5020	GC-5002S	GC-5002	GC-5004	GC-5006
(s) Frankel	B-1 /0	B-2	B-3	B-4	B-6
(s) Greaves	-	A-8	-	A-5	A-3
(s) ILSCO	IK-1 /0	IK-2	IK-2	IK-4	IK-6
(s) Joslyn	-	IF	2F	4F	6F
(s) Kearney	118109	118109	118108	118104	118102
(s) Krueger & Hudepohl	UC58C-EV	-	-	-	-
(s) Penn-Union	S1 /0	S2	S3	S4	S6
(s) Reliable	-	1F	2F	4F	6F
(s) Royal Elec. Mfg.	1739	1739	-	-	-
(s) Sherman	TS1 /0	TS2ST	TS-2	TS-4	TS-6
(s) Weaver	10W	1W	2W	4W	6W

Over Armor Rods

Anderson/Sq. D	K-5	K-4	K-4	K-2	K-2
Blackburn	2B350	2B350	2B4 /0	2B2 /0	2B1 /0
Burndy	KVS-31	KVS-31	KVS28	KVS26	KVS26
Fargo	GC-5035	GC-5035	GC-5040	GC-5020S	GC-5020
ILSCO	IKB-350	IKB-350	IKB-4 /0	-	-
(s) Kearney	118112	118112	118111	118110	118110
Penn-Union	VT-4	VT-3	VT-3	VT-2	VT-1
Weaver	350CX	350CX	4 /0CX	2 /0CX	1 /0CX

(s) designates split bolt connectors

Long Connectors (Split Bolt)  
Copper to Copper

	<u>2</u>	<u>4</u>	<u>6</u>
Anderson/Sq. D	C-2-L	C-4-L	C-6-L
Blackburn	2H3	4H3	6H3
Burndy	KS-22-3	KS-20-3	KS-17-3
Dossert	DS5-3	DS3-3	DS2-3
Greaves	A-9	A-6	A-4
Joslyn	-	4-F	6-F
Kearney	118107	118105	118103
Penn-Union	SEL-3	SEL-4	SEL-4
Reliable	-	4F	6F
Sherman	-	TSS-4	TSS-6
Weaver	2W3	4W3	6W3

p - Connectors, Service (Parrallel Groove)

Applicable Specification, "REA Specification for Connectors," DT-8

~~Aluminum-to-Aluminum~~

Solid or Stranded

	<u>No. 2</u>	<u>No. 4</u>
Alcoa	490.0	490.0
Anderson/Sq. D	LC-51A	LC-51A
Bethea Hardware	APG-1	APG-1
Blackburn	PAE 2121-9	PAE 2121-9
Burndy	UC25R2R	UC25R2R
Fargo	GA-620	GA-620
Joslyn	AL24KK	AL46KK
Penn-Union	PCAA-10BF	PCAA-10BF
Reliable	AL24KK	AL46KK
Weaver	NICA2	NICA2

p - Connectors, Service (Parallel Groove)

Applicable Specification: "REA Specification for Connectors," DT-8

Aluminum-to-Copper

Solid or Stranded

	<u>2 Al to 4 Cu</u>	<u>4 Al to 6 Cu</u>
Alcoa	R193	195
Anderson/Sq. D	LC-511A	LC-511A
Blackburn	PAC345	PAC345
Fargo	GA-620C	GA-620C
Joslyn	AL24UU	AL46UU
Reliable	AL24UU	AL46UU

p - Connectors, Service

Applicable Specification, "REA Specification for Connectors," DT-8

Copper-to-Copper

Solid or Stranded

<u>Manufacturer</u>	<u>No. 4</u>	<u>No. 6</u>
Anderson/ Sq . D	4E	6ES
Blackburn, ITT	4N	6N
Burndy	KP4C	KP6C
Dante	SE-3	SE-2
Dossert	ES-4	ES-6
Fargo	GC-5004	GC-5006
IlSCO	SX-4	SX-6
Joslyn	R46	R68
Kearney	118 118	118 117
Krueger & Hudepohl	397A	397A
Penn-Union	SX4	SX6
Reliable	R-46	R-68
Sherman	--	SC6X
Weaver	4SE	6SE



p - Connectors, Guy Bond (Parallel Groove)

Applicable Specification, "REA Specification for Connectors," DT-8

ACSR to Guy Strand

	<u>2/0</u>	<u>1/0</u>	<u>2 &amp; 4</u>
Alcoa	396.6	396.6	490.0
Anderson/Sq. D	LC-52A-GP	LC-51C-GP	LC-51A-GP
Bethea Hardware	APG-3	APG-2	APG-2
Blackburn	PAE 2121-9	PAE 2121-9	PAE 2121-9
Burndy	UC28R	UCG25R	UCG25R
Dossert	AC103-LW	AC101-LW	AC100-LW
Fargo	GA-616	GA-620	GA-620
Joslyn	744AL	555AL	438AL
Penn-Union	ALC-15	ALC-10	PCA-010
Reliable	744AL	555AL	438AL
Weaver	NICR60	NICA60	NICA60

Copper to Guy Strand

Anderson/Sq. D	LC-511A
Blackburn	2HPW (1/4")
	1/0HPW (3/8")
	PAC7
Burndy	UC8W26L
C & R	CRJC-1
Dossert	UDV 13-1-P
Fargo	GC-8040P
ILSCO	SK-3 (1/4")
	SK-1/0 (3/8")
Joslyn	J8300
Kearney	9968-1
Krueger & Hudepohl	UC58B-EV
Penn-Union	JC-1-AC
	(1/4", 3/8" guy strand)
	(1/0 strand copper max.)
Reliable	438ALC
Sherman	R-12
Weaver	K-1

p - Connectors, Compression

	<u>DISTRIBUTION</u>			
	<u>Aluminum to aluminum</u>	<u>Aluminum to copper</u>	<u>Copper to copper</u>	<u>Tap connections (Al to Al, Al to Cu)</u>
Anderson, Sq. D	AC Series	AC Series	VCUC	VCP
ITT Blackburn	Type WR	Type WR	Type CF	Type WR
Burndy	"Hycrimp"	"Hycrimp"	"Crimpit"	"Cabelok Crimpit"
Electrical Specialty	"Squeeze Conn" (Type S)	"Squeeze Conn" (Type S)	-	-
Homac	H Tap-OB&DB	H Tap-OB&DB	-	H Tap-OB&DB
Kearney	"Squeezon" (Aluminum)	"Squeezon" (Aluminum)	"Squeezon" (Copper)	"Squeezon" (Aluminum)
Penn-Union	"Press-On" (Aluminum)	"Press-On" (Aluminum)	"Press-On" (Copper)	"Penn-L-Tap"

p - Connectors, Compression

SERVICE

	<u>Aluminum-to-Aluminum</u> <u>Aluminum-to-Copper</u>	<u>Copper-to-Copper</u>
Alcoa	"SECS"	-
Anderson/Sq. D	Versa-Crimp (VCSE)	VCCS
ITT Blackburn	CS, KL	-
Burndy	"Linkits"	YDS-C, YDS-W
Electrical Specialty	VSE	-
Homac	"Shure Splicers"	-
Kearney	"Serv-ens"	-
National Tel. Supply	"Nicopress"	-
Penn-Union	"Penn Sleeves"	-

These connectors are furnished in a variety of sizes to fit all combinations of aluminum and copper service wire.

p - Connectors, Transmission

Bolted Type

Applicable Specification: "REA Specification for Connectors," DT-8

ACSR to ACSR  
ACSR to Copper

Alcoa

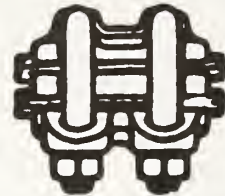
580 Series

Blackburn

2U Series

Burndy (ACSR to ACSR)

UP-A, UP-R



When ordering these clamps specify size, stranding and material of both conductors.

Compression Type

ACSR to ACSR  
Same Size



<u>Conductor Size</u>	<u>Alcoa</u>	<u>Anderson</u>	<u>Burndy</u>	<u>Kearney</u>	<u>ITT Blackburn</u>
1/0	5074.438	VCJS-50R	YCS25R	OHR-1/0-61AJ	RCJ10
2/0	5074.484	VCJS-50R	YCS26R	OHR-2/0-61AJ	RCJ20
3/0	5075.547	VCJS-61R	YCS27R	OHR-3/0-61AJ	RCJ30
4/0	5075.609	VCJS-61R	YCS28R	OHR-4/0-61AJ	RCJ40
266.8 kcmil	5076 Order by	VCJS-80R	YCS30R	HR-266-267AJ	RCJ266M
336.4 kcmil	5076 stranding	VCJS-80R	YCS33R	HR-336-267AJ	RCJ336M

ACSR to Copper

Alcoa	5070 Series
Anderson/Sq. D	VCJS
Burndy	YCR-R-CA

(Order by conductor sizes)

p - Connectors

(wedge type)

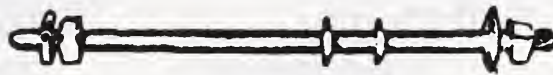
<u>Manufacturer</u>	<u>Aluminum to Aluminum</u>	<u>Aluminum to Copper</u>	<u>Copper to Copper</u>	<u>Tap Connections (Al to Al, Al to Cu)</u>
AMP	"Ampact" (Aluminum)	"Ampact" (Aluminum)	"Ampact" (Copper)	"Ampact" (Aluminum)
UTM	"Wrench-Lok"	"Wrench-Lok"	--	"Wrench-Lok"

p - Connectors

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Anderson/Square D</u>		
Compression, al to al, al to cu "Versa-Crimp" L tap.	748 11/1/62	To obtain experience.
Parallel groove, aluminum LC-52C (1/0 - 6/1 ACSR over armor rods) LC-51C (1/0 - 6/1 ACSR)	738 6/21/62	" " "
<u>Burndy</u>		
Compression, insulated "Insulink"	672 8/6/59	" " "
<u>ITT Blackburn</u>		
Compression, insulated service entrance con- nectors, Types ICS-1 and IKL	1027 10/11/73 1133 2/16/78	" " "
<u>Homac</u>		
Compression, insulated "Shure Splicers" Types Q1N and U1N	1074 9/25/75 1269 11/17/83	" " "
<u>Penn Union</u>		
Compression, Insulated Type PIK	866 2/8/68	" " "
<u>Utilco</u>		
Two bolt style, al to al Type PM	1053 11/14/74	" " "



q - Bolt, double upset



Applicable Specification: "REA Specifications for Single and Double Upset Spool Bolts," D-5

Diameter, inches	5/8	5/8	5/8	5/8
Length, inches	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
Chance	-	7826	7828	7830
Dixie	D7824	D7826	D7828	D7830
Joslyn	-	J2394	J2395	J2396
Kortick	K4760	K4761	K4762	K4763
McGraw-Edison*	DC3E15	DC3E11	DC3E12	DC3E13
Utilities Service	31065	31067	31069	31071

\*"Static proof" designs available.

s - Clevis, secondary swinging

Applicable Specifications: REA Specifications for Secondary Swinging  
Clevises, D-6

<u>Manufacturer</u>	<u>Clevis only*</u>	<u>Clevis with 1-3/4" groove spool</u>	<u>Clevis with 3" groove spool</u>
Chance	0352	0352-C909-1032	0352-C909-1034
Dixie	D0352	-	-
Joslyn	J0322	J0392	J0393
Kortick	K9259	K9109	K9149
McGraw-Edison	DC4S1	DC4S12	DC4213
Utilities Service	32043	36043	32143

\*Catalog number does not include spool. See page cm for spool type  
insulators.

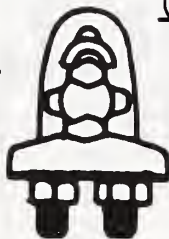
u - Deadend for galvanized steel or  
alumoweld guy strand



3-Bolt Guy Clamp

	<u>Light (1/2" bolts)</u>	<u>Heavy (5/8" bolts)*</u>
Chance	6450	6461
Dixie	D6450	D6461
Joslyn	J930	J931
Kortick	K4124	K4005
McGraw-Edison	DG3C2	DG3C3
Util. Service	5273	5275

U-Bolt Guy Clamp



	<u>Light (3/8" bolts)</u>	<u>Heavy (1/2" bolts)</u>
Barron Bethea	GCU-38C	-
Continental	GC-64C	GC-67C
Flagg (MIF)	PAX-64C	PAX-67C

Offset Guy Clamp

	<u>Light (1/2" bolts)</u>	<u>Heavy (5/8" bolts)</u>
Chance	6409	6410
Joslyn	J926	J927
McGraw-Edison	DG5C1	DG5C2

\*For use on transmission.

u - Deadend for galvanized steel guy strand

Strand Size:

1/4"      9/32"      5/16"      3/8"      7/16"

Automatic

Fargo

Bail for thimble eye

GDE-300

GDE-301

GDE-301

GDE-302

GDE-303

Reliable

Bail for thimble eye  
Bail for guy insulator

5100  
5150

5201  
5251

5201  
5251

5102  
5152

5103  
5153



Formed Type

Chance

For standard guy\*  
For wrapped guy

1/4 CTLG  
1/4 CTLG-C

9/32 CTLG  
9/32 CTLG-C

5/16 CTLG  
5/16 CTLG-C

3/8 CTLG  
3/8 CTLG-C

7/16 CTLG  
7/16 CTLG-C

Helical Line Products

For standard guy\*

HG-207-1/4"

HG-208-9/32"

HG-209-5/16"

HG-210-3/8"

HG-211-7/16"

Preformed Line Products

For standard guy\*  
For wrapped guy

GDE-1104  
WGL-2100

GDE-1105  
-

GDE-1106  
-

GDE-1107  
WGL-2103

GDE-1108  
WGL-2104

\*Class B galvanizing. When guy wire has Class C galvanizing, formed deadend should also have Class C galvanizing.

u - Deadend for alumoweld guy strand

Strand Size	3#10(4M)	7#12(6M)	7#11(8M)	7#10(10M)	7X.110"(11.5M)	7#9(12.5M)	7X.121"(14M)	7#8(16M)	7X.148"(20M)
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Formed Type  
Alumoweld Guy Strand

<u>Chance</u> For standard guy	6M-AWTLG	8M-AWTLG	10M-AWTLG	12.5M-AWTLG
<u>Helical Line Prod.</u> For standard guy	HG517-6M	HG519-8M	HG521-10M	HG523-12.5M
<u>Preformed Line Prod.</u> For standard guy	AWDE-4108	AWDE-4110	AWDE-4113	AWDE-4116
For wrapped guy	WGL-4110	WGL-4113	WGL-4116	WGL-4120
				AWDE-4122
				AWDE-4126
				HG525-16M
				HG528-20M

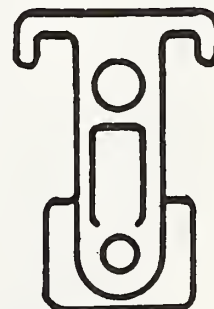
Automatic  
Alumoweld Guy Strand

Fargo	GDE-300	GDE-301	GDE-301	GDE-302
Reliable	5200	5201	5201	5202

v  
July 1984

v - Guy attachment  
for 5/8" bolt

<u>Type:</u>	<u>Formed Strap</u>	<u>Angle Bolt Eye</u>	<u>Guy Hook</u>	<u>Pole Eye Plate</u>
<u>Maximum Working Load Rating</u>	<u>23,130 N (5200 lbs.)</u>	<u>23,130 N (5200 lbs.)</u>	<u>23,130 N (5200 lbs.)</u>	<u>37,800 N (8500 lbs.)</u>
Anderson Elec./ Square D	-	-	-	GSP-05
Barron Bethea	-	-	GH-5*-	-
Bethea Metals			C101A	
Bethea Hardware	-	-	AG-5*	PE5-6A
Champ	-	-	CH58GH*	CH21PE
Chance	5004	0100	C203-0168*	-
Continental Electric	-	-	GAD-56-4	PEP-66-45
Dixie	D5004	D0100	DD-9460, DD9462*	-
Flagg (MIF)	-	-	P151A, P151X*	PX88
Joslyn	J25164	J6500	J6555, J6556	-
Kortick	K4035, K4047	K3140	-	-
McGraw-Edison	DG6H1	DG11E1	DG21H1 DG21H2	-
Power Line Hardware	-	-	HGA-58C*	PGA-548
Universal Electric	-	-	UGA-5	-
Util. Service	31030	5531	-	-



\*This hook may also be used in place of the wrapped guy arrangement in assemblies E3-2 and E3-3.



July 1984

## v - Guy attachment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Joslyn</u>		
Pole band, with cone head	745	To obtain experience.
bolt J-6281 and guy clip	8/16/62	For distribution lines
J-6275		only and 10,000 lbs
J-6280 (for 6" to 10" pole)		maximum loading.
J-6270 (for 8" to 14" pole)		

W  
July 1984

w - Insulators, guy strain  
(Fiber Reinforced Plastic)

Ult. Strength, pounds	11,000	15,000	21,000
<u>Barron Bethea</u>	BB-11-CC Series	BB-15-CC Series	BB-21-CC Series
<u>Continental</u>	G-11 Series	G-15 Series	G-21 Series
<u>Flagg (MIF)</u>	150 Series	150 Series	210 Series
<u>Joslyn-Empire</u>	400 Series	500 Series	650 Series
<u>Kearney</u>	-	321015	321021
<u>Plastigage</u>	HS11-1P Series	HSI-2X Series	HSI3-1P Series
<u>Shakespeare</u>	-	692 Series	694 Series

x - Rod, anchor

Applicable Specification: ANSI C135.2, "Standards for  
Galvanized Ferrous Strand  
Eye Anchor Rods."

Applicable Sizes: Single guy - 5/8 inch diam. 6, 7 and 8 feet long  
- 3/4 inch diam. 8, 9 and 10 feet long  
- 1 inch diam. 9 and 10 feet long

Double guy - 5/8 inch diam. 7 and 8 feet long  
- 3/4 inch diam. 8, 9 and 10 feet long  
- 1 inch diam. 9 and 10 feet long

Single Guy Drive - 5/8 inch diam. 7 and 8 feet long  
- 3/4 inch diam. 8, 9 and 10 feet long  
- 1 inch diam. 9 and 10 feet long

Double Guy Drive - 5/8 inch diam. 7 and 8 feet long  
- 3/4 inch diam. 8, 9 and 10 feet long  
- 1 inch diam. 9 and 10 feet long

The following manufacturers have shown compliance with the applicable specifications. Some manufacturers cannot supply all sizes listed above. Check with manufacturer or distributor for availability.

Blackburn  
Chance  
Dixie  
Grip-Tite

Joslyn  
Kortick  
McGraw-Edison  
Utilities Service



**γ - Galvanized Steel Strand**

Applicable Specification: ASTM A475 (Class A, B or C Coating)

**DISTRIBUTION GUY STRAND**

Grade Size	Siemens Martin			High Strength (HS)				Extra High Strength (EHS)				
	1/4"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"
<b><u>Manufacturer</u></b>												
Alcan Cable	X	X	X	X			X	X	X			X
Armco Steel Corp.	X	X	X	X		X	X	X	X		X	X
Bethlehem Steel	X	X	X	X		X	X	X	X		X	X
CF&I	X	X	X	X		X	X	X	X		X	X
Cal-Wire	X	X	X	X	X	X	X	X	X	X	X	X
Davis Walker	X	X	X	X	X	X	X	X	X	X	X	X
Florida Wire and Cable	X	X	X	X	X	X	X	X	X	X	X	X
Indiana Steel and Wire	X	X	X	X	X	X	X	X	X	X	X	X
Paulsen Wire Rope Corp.	X	X	X	X			X	X	X			X
Seal Wire Co.	X	X	X	X			X	X	X			X
Southwire	X	X	X	X	X	X	X	X	X	X	X	X
Texstrand		X		X					X		X	
U. S. Steel	X	X	X	X	X	X	X	X	X	X	X	X

**Note:** The buyer should specify Class A, B or C coating per ASTM Specification A475.

y - Galvanized Steel Strand

Applicable Specification: ASTM A475 (Class A, B or C Coating)

TRANSMISSION GUY STRAND

Grade Size	High Strength (HS)			Extra High Strength (EHS)		
	1/4"	9/32"	5/16"	3/8"	7/16"	7/16"
<u>Manufacturer</u>						
Alcan Cable	X		X	X	X	X
Armco Steel Corp.	X		X		X	X
Bethlehem Steel	X		X	X	X	X
CF&I	X		X	X	X	X
Cal-Wire	X	X	X	X	X	X
Davis Walker	X	X	X	X	X	X
Florida Wire and Cable	X	X	X	X	X	X
Indiana Steel and Wire	X	X	X	X	X	X
Paulsen Wire Rope Corp.	X		X	X	X	X
Seal Wire Co.	X		X	X	X	X
Southwire	X	X	X	X	X	X
Texstrand	X			X	X	
U. S. Steel	X		X	X	X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A475.

y - Galvanized Steel Strand

Applicable Specification: ASTM A363 (Class A, B or C Coating)

Grade Size	Manufacturer	OVERHEAD STATIC WIRE		
		High Strength (HS) 3/8"	5/16"	Extra High Strength (EHS) 3/8" 7/16"
	Alcan Cable	X		X
	Armco Steel Corp.	X	X	X
	Bethlehem Steel	X	X	X
	CF&I	X	X	X
	Cal-Wire	X	X	X
	Davis Walker	X	X	X
	Florida Wire and Cable	X	X	X
	Indiana Steel and Wire	X	X	X
	Paulsen Wire Rope Corp.	X	X	X
	Seal Wire Co.	X	X	X
	Southwire	X	X	X
	U. S. Steel	X	X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A363.



y  
July 1984

y - Al-Zn Alloy Coated Steel Wire  
 Applicable Specification: ASTM A785 (Classes 30 & 45)  
 Condition of Acceptance - To obtain experience

Distribution Guy Strand

<u>Grade</u>	<u>Siemens Martin</u>			<u>High Strength</u>					<u>Extra High Strength</u>				
<u>Size</u>	1/4"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"
Bethlehem													
Steel	X	X	X	X		X	X	X	X		X	X	

Transmission Guy Strand

<u>Grade</u>	<u>High Strength</u>					<u>Extra High Strength</u>				
<u>Size</u>	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"
Bethlehem										
Steel	X			X	X	X		X	X	X

(Purchaser should specify class 30 or class 45)

z - Anchors, Expanding and Plate

		<u>DISTRIBUTION</u>			
Designated Maximum holding power-lbs.		6000	8000	10,000	12,000
Min. Area - sq. in.		90	100	120	135
Rod Dia. - inches		5/8	5/8	3/4	3/4
Rod Length - feet		7	7	8	-
<u>Type</u>					
Chance	8 way	88135	88135	88135	88135
Dixie	4 way Plate	D88100-G -	D88115-G D7502-G	D88135-G -	D88135-G D7504-G
Everstick	3 way 4 way	834 -	836 -	8310 84-3/4	- -
Grip-Tite	8 way	A322086G	A322088G	A322812G	A322812G
Joslyn	8 way Plate	J8100-G -	J8115-G J7502-G	J8135-G J7503-G	J8135-G J7504-G
McGraw-Edison	4 way Plate	DA1E5 DA1P7	DA1E6 DA1P8	DA1E6 DA1P9	DA1E7 DA1P10
Power Line Hardware	8 way	8-100G	8-115G	8-135G	8-135G
South Central	8 way	-	84115AG	84135AG	84135AG
Utilities Service	8 way Plate	C88100-G -	C88115-G C617-G	C88135-G C622-G	C88135-G C822-G

NOTE: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

z - Anchors, plate

Applicable Specification: "REA Specification for Steel Plate Anchors," T-3

TRANSMISSION

Minimum Area 400 sq. in.

Chance

X24 - 3/4

Grip-Tite

XP24 - 3/4 - G

Joslyn

J3524 - 3/4 - G

McGraw-Edison

DA4P7 - 3/4 - G

Power Line Hardware

CP-24G

NOTE: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

z - Anchors, Service

Designated Maximum Holding Power in Sand - 2500 lbs.

	<u>Screw</u>	<u>Expanding</u>
Chance	6346	6870
Dixie	D-6526	-
Grip-Tite	-	322065G
Joslyn	J6526W-CA	J0870-G
McGraw-Edison	DA2N1	-
Power Line Hardware	-	8-70G
Utilities Service	C6346-G	PL62-2.5-G

z - Anchors, Swamp

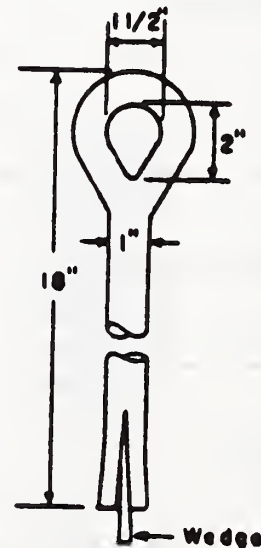
DISTRIBUTION

	<u>10" dia.</u>	<u>12" dia.</u>	<u>15" dia.</u>
Chance	10150AS	132AS	152AS
Dixie	D-6710-S	D-6713-S	D-6715-S
Joslyn	J2871SG	J2872SG	J2873SG
Utilities Service	C10150A-G	C122A-C	C152A-G

NOTE: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

z - Anchors, Rock

	Expanding Rock Anchors			Rock Guy Bolt
Anchor Size - inches	1-3/4	1-3/4	1-3/4	1-3/4
Rod Length - inches	15	30	53	18
Rod Diameter - inches	3/4	3/4	3/4	1
Chance	R315	R330	R353	-
Joslyn	J3436	J3437	J3438	
Kortick	K5503	K5504	K5505	K2377
McGraw-Edison	-	-	-	DALW1
Utilities Service	CR315	CR330	CR353	5003



z - Pole keys

Chance	P-4817
Joslyn	J-4817
Utilities Service	CP-4817

z - Anchors, Power-installed screw

Manufacturer:

A. B. Chance Company  
"SS" Multi Helix Anchors

Working Load Categories				
Soil	35,600 N	53,400 N	71,000 N	89,000 N
Type	(8,000 lb.)	(12,000 lb.)	(16,000 lb.)	(20,000 lb.)
A1	12642-AE	12642-AE	12642-AEJ	12642-AEJ
Soil	12642-AEJ	12642-AEJ	12642-EJN	12642-EJN
Class 2	12642-EJN	12642-EJN	12642-EJNS	12642-EJNS
A2	12642-AE	12642-AE	12642-AEJ	12642-EJN
Soil	12642-AEJ	12642-AEJ	12642-EJN	12642-EJNS
Class 3	12642-EJN	12642-EJN	12642-EJNS	
B	12642-AE	12642-AEJ	12642-AEJ	12642-EJNS
Soil	12642-AEJ	12642-EJN	12642-EJN	
Classes	12642-EJN		12642-EJNS	
4 & 5				
C	12642-AEJ	12642-EJN	12642-EJNS	
Soil	12642-EJN			
Classes				
6 & 7				

Manufacturer:

Joslyn  
"PS" Screw Anchors

Working Load Categories				
Soil	35,600 N	53,400 N	71,000 N	89,000 N
Type	(8,000 lb.)	(12,000 lb.)	(16,000 lb.)	(20,000 lb.)
A1	J24991ACA	J24991ACA	J25534ACAB	J25534ACAB
Soil	J23381ACA	J23381ACA	J25535ACAB	J25535ACAB
Class 2	J23383ACA	J23383ACA	J25533ACAB	J25533ACAB
A2	J24991ACA	J24991ACA	J23381ACA	J23383ACA
Soil	J23381ACA	J23381ACA	J23383ACA	J23384ACA
Class 3	J23383ACA	J23383ACA	J23384ACA	
B	J24991ACA	J23381ACA	J23381ACA	J23384ACA
Soil	J23381ACA	J23383ACA	J23383ACA	
Classes	J23383ACA		J23384ACA	
4 & 5				
C	J23381ACA	J23383ACA	J23384ACA	
Soil	J23383ACA			
Classes				
6 & 7				

- NOTES: 1. See REA Specification T-10 for definitions and explanations.
2. Anchors in the 53,400 N (12,000 lb.) category or above for use on wood poles must be used with hardware commensurate with the working load. Hardware may provide for either single or multiple guy attachments to the anchor.
3. Anchors listed in a specific working load category and/or soil class may generally be used at lower working load categories and/or lower numerical soil classes.



z - Anchors, Power-installed screw

Manufacturer: Dixie Electrical Manufacturing Company  
Multi-Helix Screw Anchors

Working Load Categories				
Soil Type	35,600 N (8,000 lb.)	53,400 N (12,000 lb.)	71,000 N (16,000 lb.)	89,000 N (20,000 lb.)
A <sub>1</sub>	D-6632	D-6632	D-6636	D-6636
Soil	D-6636	D-6636	D-6637	D-6637
Class 2	D-6637	D-6637	D-6638	D-6638
A <sub>2</sub>	D-6632	D-6632	D-6636	D-6637
Soil	D-6636	D-6636	D-6637	D-6638
Class 3	D-6637	D-6637	D-6638	
B	D-6632	D-6636	D-6636	D-6638
Soil	D-6636	D-6637	D-6637	
Classes 4 & 5	D-6637		D-6638	
C	D-6636	D-6637	D-6638	
Soil	D-6637			
Classes 6 & 7				

- NOTES: 1. See REA Specification T-10 for definitions and explanations.
2. Anchors in the 53,400 N (12,000 lb.) category or above for use on wood poles must be used with hardware commensurate with the working load. Hardware may provide for either single or multiple guy attachments to the anchor.
3. Anchors listed in a specific working load category and/or soil class may generally be used at lower working load categories and/or lower numerical soil classes.

z  
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z - Anchors

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
Screw anchors, power installed	1252 2/3/83	To obtain experience.
24462 (6,000 and 8,000 lb. )		
12332P 5/8" rod		
12587 5/8" thimbleye		
24484 (10,000 and 12,000 lb. anchor helix)		
12632P (3/4" rod)		
6512 (thimbleye nut)		
<u>Dixie</u>		
Screw anchors, power- installed	859 2/9/67	To obtain experience.
D-1162-G (6,000 & 8,000 lb., 5/8" rod)		
D-1375-G (10,000 & 12,000 lb., 3/4" rod)		
<u>Joslyn</u>		
Screw anchors, power- installed	973 8/19/71	To obtain experience.
J11b CA (6,000 & 8,000 lb., 5/8" rod)		
J13C CA (10,000 & 12,000 lb., 3/4" rod)		
<u>McGraw-Edison</u>		
Screw anchors, power- installed	992 5/25/72	To obtain experience.
DALLG621 (6,000 & 8,000 lb., 5/8" rod)		
<u>Foresight</u>		
Duckbill Service Anchor	1202	To obtain experience.
#250 (2500 lbs., 5/8" rod)	12/18/80	
Duckbill Anchor		
#400 (6000 & 8000 lbs., 3/4" rod)		
#800 (10,000 & 12,000 lbs., 1" rod)		

NOTES: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

Catalog numbers shown are for anchors with 1-3/8" hubs. Equivalent anchors with 1-1/2" hubs are also acceptable. (A special installing wrench is required.)

aa - Nut, eye  
ab - Nut, thimble eye  
5/8 inch

	<u>Eye Nut Conventional</u>	<u>Eye Nut Eyelet</u>	<u>Thimble Eye Nut</u>
			
Barron Bethea	OEN-2A	B-14A	EN-4A
Bermy's Forging Co.	OE1	-	-
Bethea Hardware	E-5	B-5	NT-5
Champ	CH58EN	CH58BE	CH40TN
Chance	6502	-	6510
Continental Electric	EN-5	BE-5	TN-5
Dixie	D6502	DD-6517	D6510
Flagg (MIF)	P125C	P127A	P128A
Hughes	EN60	-	-
Joslyn	J1092	J1126	J6510
Kortick	K4212	K4413	K3111
McGraw-Edison	DG2E3	DG6E1	DG1E1
Power Line Hardware	OEN-1	BEL-1	-
Utilities Service	450	497	C580

ac  
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ac - Brace, sidearm diagonal

	<u>1-1/2 inch angle</u> <u>3/16" x 5'</u>	<u>1-3/4 inch angle</u> <u>3/16" x 7'</u>
Chance	-	6984
Joslyn	J1521	J1525
Kortick	K1951	K1954
McGraw-Edison	DB1A1	DB1A5
Utilities Service	5210	5212



ae - Surge Arresters, Distribution  
(Lightning Arresters)

<u>Manufacturer</u>	<u>Type</u>	<u>Ratings, kV</u>	<u>Duty</u>
General Electric	Alugard	9, 10, 18	Heavy
Joslyn	Q	9/10, 18	Normal
	J	9/10, 18	Heavy
Kearney	Unigap	9, 10, 18	Heavy
McGraw-Edison	TS	9/10, 18	Normal
	TL	9, 10, 18	Heavy
Ohio Brass	DA-III	9/10, 18	Normal
	DA-IV	9, 10, 18	Heavy
Westinghouse	LV	9/10	Normal
	LVBB	9/10, 18	Heavy

NOTE: Only arresters with top gaps and without ground lead  
disconnectors are acceptable.

ae - Surge Arresters, Substation\*  
(Lightning Arresters)

<u>Manufacturer</u>	<u>Type</u>	<u>Accepted Ratings - kV</u>	<u>Manufacturer's Classification</u>
General Electric	Alugard	3, 9, 10, 18	Distribution
Joslyn	2RS	9/10, 18	Distribution
	Q	3, 9/10, 18	Distribution
Kearney	Unigap	3, 9, 10, 18	Distribution
McGraw-Edison	ES	3, 9/10, 18	Distribution
	F3	9-120	Intermediate
	G	3-144	Station
Ohio Brass	DA	3, 9, 10, 18	Distribution
Westinghouse	LV	3-20	Distribution
	IVL	3-120	Intermediate
	CPL	3-312	Station

\*For instructions concerning application at substations, refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).



## ae - Surge Arrester, Substation\*

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>General Electric</u>		
Surge arrester, station class, metal oxide type, Tranquell, 2.7 kV thru 588 kV	1164 5/24/79	To obtain experience
Surge arrester, intermediate class, metal oxide type, Tranquell, 3 kV thru 120 kV	1197 10/9/80	To obtain experience
<u>Joslyn</u>		
Surge arrester, intermediate class, metal oxide type, Type ZI 3 thru 144 kV	1268 10/27/83	To obtain experience
Surge arrester, station class, metal oxide type, Type ZS, 3 kV thru 240 kV	1278 4/12/84	To obtain experience
<u>McGraw-Edison</u>		
Surge arrester, station class, metal oxide type, VariSTAR 3 kV thru 192 kV Type ATZ1A	1223 11/19/81	To obtain experience
<u>Ohio Brass</u>		
Surge arrester, station class, metal oxide type, Dynavar, 3 kV thru 357 kV	1175 11/2/79 1239 7/29/82	To obtain experience
Surge arrester, intermediate class, metal oxide type, Dynavar, 3 kV thru 120 kV	1242 9/9/82	To obtain experience
<u>Westinghouse</u>		
Surge arrester, station class, metal oxide type, SMX-30, 3 thru 240 kV	1256 4/6/83	To obtain experience

\*For instructions concerning application at substations refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).

af - Cutouts, Distribution, Open

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Rating</u>
Chance	C	15, 27 kV
General Electric	9F 34D	15, 27 kV
Joslyn	Series 2	15, 27 kV
Kearney	MX (with or without loadbreak accessory)	15, 27 kV
McGraw-Edison	SI	15, 27 kV
S & C Electric	XS	15, 27 kV
Southern States	Series 66	15, 27 kV
	Series 70	15 kV
Westinghouse	NCX	15, 27 kV
	LBU-11	15, 27 kV

NOTE: The buyer should specify the load rating, voltage rating, interrupting rating and required accessories.

Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

af - Cutout, open-link fuse support

<u>Manufacturer</u>	<u>Mounting</u>	<u>7.2/12.5 kV 50 amp.</u>	<u>14.4/24.9 kV 50 amp.</u>
Joslyn	Crossarm	J9254-6	J9264-6
Kearney	Crossarm	6484-55	-
	Bushing	6486-4	-
McGraw-Edison	Crossarm	FT1A2	FT1A4
	Bushing	FT1OA3	-
RTE	Crossarm	41S3	41S6

NOTE: Items listed on this page are fuse supports only and have no inherent interrupting capacity. They should be used with fuse links capable of interrupting at least 1200 amperes and for transformer protection only.

af - Power Fuses, Substation

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Rating</u>
Kearney	HX	15
	HX	27
McGraw-Edison	LMO	15
	EMO	15
	HXO	15-46
S & C Electric	XS	15-25
	SMD (Boric acid)	15-138
Southern States	Series P	15-161
Westinghouse	RDB (Boric acid, refillable)	15-34.5
	DBS (Boric acid, non-refillable)	15-34.5
	DBA (Boric acid, refillable)	46-69

NOTE: All fuses listed on this page should be furnished with NEMA standard insulators. The buyer should specify the current rating, voltage rating, interrupting rating and required accessories.

## ag - Fuses, Current Limiting, Backup

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
15 kV Class		
Type K-Mate 25	1084	1. To obtain experience.
Catalog No. C70L-31KA	2/19/76	
25 kV Class		2. Must be used in series
Type K-Mate 25	1196	with external expulsion
Catalog No. C70L-32KA	9/18/80	fuse 25 K or 15 T or
		smaller or with CSP
		transformers 50 kVA or
		smaller.
 <u>McGraw-Edison</u>		
15 kV Class		
No. FAH6H45	1094	Same as above.
25 kV Class	7/29/76	
No. FAH7H45		
 <u>Westinghouse</u>		
15 kV Class		
Type CLTX, 25K/15T	1105	Same as above.
25 kV Class	1/6/77	
Type CLTX, 25K/15T		
 <u>RTE</u>		
15 kV Class		
Catalog No. 3553025M11	1140	Same as above.
25 kV Class	6/1/78	
Catalog No. 3554025M11		

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ah - Tie, insulator, formed type

Manufacturer

Type

Preformed Line Products

WT "Wraplock"  
(Order for specific  
conductor size and  
insulator)

ST "Groove-Formed"  
side tie (Order for  
specific conductor  
size and insulator)



ah - Tie, insulator, formed type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
Tygard Type AWTY-56* (Side tie for use over armor rod on spool insulator with 1-3/4" groove)	863 4/13/67	To obtain experience.
Super Top-Tie, Type STT for single or double support use, with insulators 2 1/4" through 3 1/2" neck diameter and single support use on spool insulators with 1-3/4" groove diameter (Order for specific conductor size.)	1132 2/2/78  1138 5/4/78	To obtain experience.
<u>Preformed Line Products</u>		
Spool Tie for ACSR, Type SPL* (Side tie for use on spool insulator with 1-3/4" groove)	877 9/14/67	To obtain experience.
DST double support top tie (Order for specific conductor size and insulator)	978 10/28/71	To obtain experience.
DBST double side tie (Order for specific conductor size and insulator)	1057 1/23/75	To obtain experience.

\*Not for side mounting on pin or post insulators.

ai - Rods, Ground

Applicable Size: The standard length is 8 feet and catalog numbers listed below are for this length. Longer rods may be required for special conditions.

Copper-covered ground rods are listed with a 13 mil minimum at any point and a 15 mil average covering of copper. All purchases should specify that a factory certification of the thickness of the copper must accompany the shipment of the rods.

Copper-covered steel rods

5/8"

Boggs	EB810
Calpico	CP588
Carolina Galvanizing	P-588
Erico	E858
ITT Blackburn	6258
Joslyn	J8338
Kortick	K5428
Knight	858
Power Line Hardware	GR-588C
Utilities Service	6617
Weaver	W588
Wilcor	WA588C

Stainless Clad Steel

Manufacturer

5/8"

3/4"

Teledyne (MEFCO)

"PERMAGROUND"

"PERMAGROUND"

ai - Rods, Ground

Applicable Size: The standard length is 8 feet and catalog numbers listed below are for this length. Longer rods may be required for special conditions.

Hot Dip Galvanized Steel

<u>Manufacturer</u>	<u>5/8"</u>	<u>3/4"</u>
Boggs	G588 PTG588**	G348 PTG348**
Carolina Galvanizing	G588 G-588PT**	G348 G-348PT**
Chance	8578 C203-0107** C203-0377*	8618 C203-0109**
Dixie	D8578	D8618
Erico	G588 G588PT**	G348 G348PT**
Galvan	GR6258	GR7508
General Electric	0982-00002	0982-00003
Grip-Tite	GT588 GT588PT**	GT348 GT348PT**
Joslyn	J3358B* J5328 J5228**	J3458B* J5338 J5238**
Knight	G-588 G-588PT**	G-348 G-348PT**
Kortick	K4658	K4678
Lloyd	6258H	7508H
McGraw-Edison	DN5S8 DN6D8*	DN6S8 DN7D8*
National Utility Products	UR1016-8	UR1216-8
Porcelain Products	7338	7348
Power Line Hardware	GR-588G	GR-348G
Utilities Service	5307	6338
Weaver	8480G	8340G
Wilcor	WA8580G	WA8340G

Electro-Galvanized Steel

Calpico	G8580	-
LMP	6258E**	7508E**

Stainless Steel

Teledyne (MEFCO)	TDY Sol	TDY Sol
Wilcor	WA 588-S	WA 348-S

\*Rod furnished with clamp.

\*\*Rod furnished with 4 ft., No. 6 tinned or galvanized copper pigtail.

ai - Rods, ground, sectional

Galvanized steel and  
copper-covered steel

Copper-covered ground rods are listed with a 13 mil minimum at any point and a 15 mil average covering of copper. All purchases should specify that a factory certification of the thickness of the copper must accompany the shipment of the rods.

Sectional Ground Rods

<u>Manufacturer</u>	<u>8' long</u>	<u>10' long</u>	<u>Couplings</u>	<u>Driving studs</u>
Blackburn	6258S	6260S	60C	60DS
Carolina Galv.	S-588 GSD-588 GSD-348	S-5810 GSD-5810 GSD-3410	CR58 CG250 CG250	DSH58 DSH58 DSH58
Chance Galv. Steel	C203-0052	8512	8611	-
Erico	ES858	ES1058	CR58	DSH58
Joslyn Galv. Steel	J9158 J23282.8	J9160 J23282.10	J9182 J23282A	J9186 J9186
Knight	S858	S1058	SC58	DS58
Kortick	K5441	K5443	K5482	K5492
McGraw-Edison Galv. Steel	DN17S8	DN16S10	DN1K2	-
Power Line Hardware	GR-588CS	GR-5810CS	CBC-58	DS-58
UTM	-	-	910-030-05	-
Weaver	W-588T	W-5810T	158C	358D

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aj - Clamp, Ground Rod

<u>Manufacturer</u>	<u>For 5/8"</u> <u>Copper-</u> <u>Covered Rod</u>	<u>For 3/4" Galv.</u> <u>or Stainless</u> <u>Steel Rod</u>	<u>For 5/8" Galv.</u> <u>or Stainless</u> <u>Steel Rod</u>
AMP	Copper AMPACT (Order by Description)	-	-
Anderson	GC-5	-	-
Blackburn	G5	-	-
Boggs	G31	-	-
Burndy	GRC58	-	-
C & R Products	CRGC-58	-	-
Carolina Galv.	CPH58	-	CPH58
Dossert	GNL62H	-	-
*Erico (Cadweld)			
1 ground wire	GR1-1 61G	GR1-1 81G	GR1-1 61G
2 ground wires	GT1-1 61G	GT1-1 81G	GT1-1 61G
Greaves/Mercury	G-580	-	-
IlSCO	GRC-58	-	-
Joslyn	J83 92AB	J25985	J25932
Knight	C58	UCSS	UCSS
Kortick	K4647	-	-
O-Z Elec. Mfg.	BGO304	-	-
Penn-Union	CEB-2	-	-
Power Line Hardware	RC-58C	-	-
Reliable	E58	3459	3459
UTM	910-023-03	910-007-02	910-007-02
Weaver	WB5/8	-	-
Wilcor	HGR5/8	WAU-3/4"	WAU-5/8"

\*Includes disposable molds.

## Conditional List

aj

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aj - Clamp, ground rod

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Kearney</u> 18457 ("Squeezon," 5/8 inch)	467 5/6/52	To obtain experience.
<u>Power Line Hardware</u> RC-34 (for 5/8" and 3/4") galvanized or stainless steel ground rod	1114 5/12/77	To obtain experience.
<u>Burndy</u> YGHP (for 5/8" copper- covered rods)	1234 5/13/82	To obtain experience.



al - Staples, ground wire

Applicable Specification: ANSI C135.14, "Standards for Staples with Rolled or Slash Points."

Length x Spread (inches)	1-1/2 x 1/4	2 x 1/2	1-1/2 x 3/8	3 x 1-1/16
Diameter	9 Gauge <u>Galv. Steel</u>	8 Gauge <u>Galv. Steel</u>	8 Gauge <u>Copper-Coated</u>	1/4 <u>Moulding</u>
Blackburn	-	-	CUS9	CUS22
Chance	C205-0257	C205-0216	9167	9161
Copperweld	-	-	CP52	-
Joslyn	J1672G	J157	J6652	J6497
Kortick	-	-	K247	K236
Larson	-	350453	750233	721312
Utilities Service	88	86	48	46

Barbed staples, ground wire

Length x Spread (inches)	1-1/2 x 3/8	2 x 5/8	1-1/2 x 3/8	3 x 1-1/16
Diameter	.131 <u>Galv. Steel</u>	.165 <u>Galv. Steel</u>	.140 <u>Copper-Coated</u>	7/32 <u>Galv. Steel</u>
Joslyn	J7656	J7672	J7682	J7664

Staples, alumoweld

Length x Spread (inches)	2 x 1/2	1-1/2 x 3/8	3 x 1-1/16
Diameter	<u>8 gauge</u>	<u>8 gauge</u>	<u>1/4 moulding</u>
Joslyn	-	J-6652AL	J-7493AL

Clip, ground wire

Kearney	12326
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Conditional List

al

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al - Staples, Ground Wire

Clip, Ground Wire

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Fastex (ITW)</u> No. 780-2	1038 4/4/74	To obtain experience.

an - Transformers, distribution, pole type  
Primary Voltages 7.2/12.5, 7.62/13.2 and 14.4/24.9 kV

Applicable Specifications: REA Specifications for Rural Distribution  
Transformers, D-10

Listing is by type rather than by catalog number because of the many  
possible combinations of voltage, kVA and taps and protective equipment.

	<u>7.2/12.5 &amp; 7.62/13.2</u>	<u>14.4/24.9</u>	<u>Dual Voltage</u>
<u>Arkansas Electric Cooperative</u>			
Conventional, single bushing	ASE		
<u>Central Moloney</u>			
Conventional, single bushing	AOD	AOD	AOD
Conventional, two bushing	AOD	AOD	AOD
Self-protected, single bushing	DVP	DVP	DVP

The single bushing transformer may  
also be obtained with bushing mounted  
cutout and lightning arrester, and  
with internal fuse and double gap.

<u>Dowzer</u>	
Conventional, single bushing	CR
Self-protected, single bushing	CSP-R
Conventional, two bushing	CD

<u>ERMCO</u>			
Conventional, single bushing	CONV	CONV	CONV
Conventional, two bushing	CONV	CONV	CONV
Self-protected, single bushing	CSP	CSP	CSP

The single bushing transformer may  
also be obtained with double gap and  
internal fuse (Type DG) or lightning  
arrester and external cutout (Type COLA).

Dead-front for use in enclosure: Add "R" (Radial) or "LF" (Loop feed)  
to designation.

an - Transformers, distribution, pole type  
Primary Voltages 7.2/12.5, 7.62/13.2 and 14.4/24.9 kV

	<u>7.2/12.5 &amp; 7.62/13.2</u>	<u>14.4/24.9</u>	<u>Dual Voltage</u>
<u>General Electric</u>			
Conventional, single bushing	HS	HS	HS
Self-protected, single bushing	HSBA	HSBA	HSBA
Conventional, two bushing	HS	HS	HS

Type HS may also be obtained with internal fuse, with internal fuse and double gap, with bushing mounted cutout and double gap, and with bushing mounted cutout and arrester (Type HSCA).

<u>Howard Industries</u>			
Conventional, single bushing	REC-C	REC-C	REC-C
Conventional, two bushing	Conv-2B	Conv-2B	Conv-2B
Self-protected, single bushing	REC-P	REC-P	REC-P

<u>Kuhlman</u>			
Conventional, single bushing	I	I	I
Conventional, two bushing	B	B	B
Self-protected, single bushing	H	H	H

Type I may also be purchased with internal fuse, with internal fuse and double gap (Type G), and with bushing mounted cutout and lightning arrester (Type J).

<u>Magnetic Electric</u>			
Conventional, single bushing	AOD	AOD	AOD
Conventional, two bushing	AOD	AOD	AOD
Self-protected, single bushing	AOD	AOD	AOD

<u>McGraw-Edison</u>			
Conventional, single bushing	G	G	GD
Self-protected, single bushing (with open-gap valve arrester)	L	L	LD
Conventional, two bushing	E	E	ED

Type G may also be obtained with internal fuse, with internal fuse and double gap, and with bushing mounted cutout and lightning arrester.

an - Transformers, distribution, pole type  
Primary Voltages 7.2/12.5, 7.62/13.2 and 14.4/24.9 kV

	<u>7.2/12.5 &amp; 7.62/13.2</u>	<u>14.4/24.9</u>	<u>Dual Voltage</u>
<u>NECO/Hammond</u>			
Conventional, single bushing	NC	NCH	
Self-protected, single bushing	NC-1	NCHCB	

Type NC may also be obtained with double gap and internal fuse (NC-2) and with arrester and open link fuse (NC-3).

<u>H. K. Porter (Delta-Star)</u>			
Conventional, single bushing	OS-B 3	OS-B 3	OS-B 3
Self-protected, single bushing	OSP-B 3	OSP-B 3	OSP-B 3
Conventional, two bushing	OS-A	OS-A	OS-A

Types OS-B3 and OS-A may also be obtained with internal fuse.

<u>RTE</u>			
Conventional, single bushing	REA-Conv	REA-Conv	REA-Conv
Self-protected, single bushing	REA-CSP	REA-CSP	REA-CSP
Conventional, two bushing	REA-Conv	REA-Conv	REA-Conv

Conventional single bushing type may also be purchased with external overload protection and double gap and with bushing mounted cutout and lightning arrester.

<u>Rural Electric Supply Cooperative</u>	
Conventional, single bushing	CONV
Conventional, two bushing	CONV
Self-protected, single bushing	CSP

The single bushing transformer may also be obtained with double gap and internal fuse (Type DG) or lightning arrester and external cutout (Type COLA).

Dead-front for use in enclosure:  
Add "R" (Radial) or "LF"  
(Loop Feed) to designation.



an - Transformers, distribution, pole type  
Primary Voltages 7.2/12.5, 7.62/13.2 and 14.4/24.9 kV

	<u>7.2/12.5 &amp; 7.62/13.2</u>	<u>14.4/24.9</u>	<u>Dual Voltage</u>
<u>United (Ky. AEC)</u>			
Conventional, single bushing	SC	SC	DSC
Conventional, two bushing	SC	SC	DSC
Self-protected, single bushing	SCP	SCP	DSCP

SC and DSC may be purchased with  
external fuse and arrester (SP and DSP)

VanTran

Conventional, single bushing	CR
Self-protected, single bushing	CSP-R
Conventional, two bushing	CD

Westinghouse

Conventional, single bushing	S-B3	S-B3	S-B3
Self-protected, single bushing	CSP-B3	CSP-B3	CSP-B3
Conventional, two bushing	S-A	S-A	S-A

Type S-B3 may also be obtained  
with internal fuse, with internal  
fuse and double gap, and with  
lightning arrester and open link  
cutout (Type PC).

Sesco

Conventional, single bushing	RU
Self-protected, single bushing	ESP
Conventional, two bushing	CONV

Type RU may also be purchased  
with internal fuse and/or  
lightning arrester.







an - Transformers, Power  
Three-Phase, Step-Down  
for Distribution Substation Use

Primary Voltage-kV	kVA						MVA							
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30
<u>Central Moloney</u>														
34.4	X	X	X	X	X	X	X	X						
43.8	X	X	X	X	X	X	X	X	X					
67.0	X	X	X	X	X	X	X	X	X					
<u>Federal Pacific</u>														
67.0							X			X	X	X	X	X
115										X	X		X	X
138										X	X	X	X	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using Federal Pacific Type TC-525 load tap changers.

<u>General Electric</u>														
34.4	X	X		X	X	X	X	X	X	X	X	X		
43.8	X	X		X	X	X	X	X	X	X	X	X		
67.0	X	X		X	X	X	X	X	X	X	X	X	X	X
115							X	X	X	X	X	X	X	X
138							X	X	X	X	X	X	X	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using General Electric Types LR72, LR65 and LRT-200 load tap changers.

<u>Kuhlman</u>														
34.4					X	X	X	X	X	X	X		X	
43.8					X	X	X	X	X	X	X	X		
67.0					X	X	X	X	X	X	X	X	X	
115						X	X	X	X	X	X	X	X	X
138						X	X	X	X	X	X	X	X	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using Siemens-Allis Types TLS and TLH-21 load tap changers.

an - Transformers, Power  
Three-Phase, Step-Down  
for Distribution Substation Use

Primary Voltage-kV	kVA						MVA							
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30
<u>McGraw-Edison</u>														
34.4		X		X	X	X	X	X	X	X				
43.8		X		X	X	X	X	X	X	X				
67.0		X		X	X	X	X	X	X	X				
115										X	X		X	
138											X			

Transformers 5 MVA and larger also accepted as load tap changing transformers using McGraw-Edison Types 550, 550B, and 550C load tap changers.

<u>ASEA Electric</u>														
34.4							X	X	X	X	X			
67.0					X	X	X	X	X	X	X	X	X	X
115						X	X	X	X	X	X	X	X	X
138						X	X	X	X	X		X	X	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using ASEA Electric Type UZD load tap changers.

<u>Westinghouse</u>														
34.4		X	X	X	X	X	X	X	X				X	
43.8		X	X	X	X	X	X	X	X	X	X			
67.0		X	X	X	X	X	X	X	X	X	X	X	X	X
115										X	X	X	X	X
138											X	X	X	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A, UTT-B and UYW load tap changers.

an - Transformers, Distribution, Pole Type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Dowzer</u>		
14.4/24,9 .kV and Dual Voltage	824	To obtain experience.
	9/19/65	
Conventional, single bushing	1011	
Type CR	3/1/73	
Self-protected, single bushing		
Type CSP-R		
Conventional, two bushing		
Type CD		

an - Transformers, Distribution, pole type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Tarrant</u> 7.2/12.5 kV and 7.62/13.2 kV	791 4/30/64	To obtain experience.
Conventional, single bushing Type CB-1		
Conventional, two bushing Type CB-2		
Self-protected, single bushing Type SG-1		
May also be obtained with lightning arrester and internal fuse. Types PSG-1 and PSG-2.		
<u>VanTran</u> 14.4/24.9 kV and Dual Voltage	1075 10/16/75	To obtain experience.
Conventional, single bushing Type CR	1095	
Conventional, two bushing Type CD	8/11/76	
Self-protected, single bushing Type CSP-R		



Conditional List  
an(2.1)  
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**Condition of Acceptance:** To obtain experience.

Transformers with 115 kV and 138 kV primary voltage ratings are acceptable with full BIL and with one step reduced BIL.

"X" indicates that acceptable test data have been furnished REA for this operating and for secondary voltages in either 15 kV or 25 kV class.

"s" indicates that performance specifications have been furnished REA and test data are to be submitted when available.

[illegible]

General Electric		S	
43.8			
115			
Hevl-Duty			
34.4			
43.8			
67.0			
115			

<b>Hevl-Duty</b>	X	X	X	S	S	S	S	S
<u>34.4</u>	X	X	X	S	S	S	X	S
43.8	X	X	X	S	S	S	X	S
67.0	X	X	X	X	S	S	X	S
115		X	X	X	S	S	S	S

# an - Transformers, Power Single-Phase, Step-Down for Distribution Substation Use

Condition of Acceptance: To obtain experience

ASEA Electric  
67.0

an - Transformers, Power  
Single-Phase, Step-Down  
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kv	<u>167</u>	<u>250</u>	<u>333</u>	<u>500</u>	<u>833</u>	<u>1250</u>	<u>1667</u>	<u>2500</u>	<u>3333</u>	<u>5000</u>	<u>6667</u>	<u>8333</u>	<u>10,000</u>
Westinghouse													
34.4										8		8	
43.8										8		8	
67.0										8		8	

an - Transformers, Power  
Three-Phase, Step-Down  
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kV	kVA						MVA							
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30
<u>Central Moloney</u>														
34.4									s					
<u>Federal Pacific</u>														
34.4							s	s	s					
67.0								s	s					
Transformers 5 MVA and larger also accepted as load tap changing transformers using Federal Pacific Type TC-525 load tap changers.														
<u>Ferranti-Packard</u>														
34.4	s	s	s	s	X	s	s							
<u>General Electric</u>														
34.4													s	s
43.8												s	s	s
115												s		s
138														s

Transformers 5 MVA and larger also accepted as load tap changing transformers using General Electric  
Types LR72, LR65 and LRT-200 load tap changers.

an - Transformers, Power  
Three-Phase, Step-Down  
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kV	kVA					MVA									
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30	
Hevl-Duty															
34.4	s	s	X	s	X	X	X	X	s	s	X	s	s	s	
43.8	s	s	s	s	s	X	X	X	X	X	X	s	s	s	
67.0			X		X	X	X	X	X	X	X	X	s	s	
115					X	X	X	X	X	X	X	X	s	s	
138						X	s	s	X	s	s	s	X	s	

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse  
Types UTS-A and UTT-B and Siemens-Allis Type TLS load tap changers.

<u>McGraw-Edison</u>														
34.4	s		s								s	s	s	s
43.8	s		s								s	s	s	s
67.0	s		s								s	s	s	s

Transformers 5 MVA and larger also accepted as load tap changing transformers using McGraw-Edison  
Types 550, 550B and 550C load tap changers.

<u>H. K. Porter</u> (Delta-Star)														
34.4	s	s	s		s	X	X	X	s					
43.8			s	s	s	X	X	X	s	X				
67.0			X	s	X	X	X	X	X	X	X			
115						X	X	X	s	X	X			
138							s	s	s	s	s	s	s	X

Transformers 5 MVA and larger also accepted as load tap changing transformers using Siemens-Allis  
Types TLS and TLH-21 load tap changers.

an - Transformers, Power  
Three-Phase, Step-Down  
for Distribution Substation Use

Condition of Acceptance: To obtain experience

Primary Voltage-kV	kVA						MVA							
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25	30
RTE														
34.4			s	s	X	X	X							
43.8			X	s	s	X	X							
ASEA Electric														
115													s	
138												s	s	

Transformers 5 MVA and larger also accepted as load tap changing transformers using ASEA Electric Type UZD load tap changers.

MGM														
34.4					s	X	s	s	s					
43.8					X	X	s	s	s					
67.0					s	s	X	X	s					

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A and UTT-B load tap changers.



an - Transformers, Power  
Three-Phase, Step-Down  
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary Voltage-kV	kVA					MVA							
	750	1000	1500	2000	2500	3750	5	7.5	10	12	15	20	25

Uptegraff

S	S	S	S	S	S	X	X						
S	S	S	S	S	S								X

Westinghouse

S							S	S	S	S	S	S	S
S												S	S
												S	S
													S
													S
													S

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse  
Types UTS-A, UTT-B and UYW load tap changers.

an - Transformers, 2:1 Ratio, Single Phase,  
Autotransformers or Two-Winding Transformers  
for Use in System Voltage Conversion

Condition of Acceptance: To obtain experience.

<u>Manufacturer</u>	<u>Designation</u>	<u>Size</u>
<u>Central Moloney</u> 2-WND	AOD	167-500
<u>General Electric</u> 2-WND AUTO	HS STEP HS STEP	167-500 167-1000
<u>Howard Industries</u> 2-WND	STEPS	167-500
<u>McGraw-Edison</u> 2-WND AUTO	"Round-Coil" MEPS-AUTO	167-500 167-1000
<u>H. K. Porter (Delta-Star)</u> 2-WND AUTO	LTD LTD-A	167-500 167-1000
<u>Westinghouse</u> 2-WND	"Jumbo"	167-500

NOTE: Two-winding transformers are self-protected under external short circuit in accordance with ANSI C57.12.90A. Auto-transformers will withstand 25 times rated current under external short circuit in accordance with ANSI C57.12.90A.

ao - Bolt, strand eye, straight (thimble eye)

Applicable Specification: ANSI C135.4, "Standards for  
Galvanized Ferrous Eye Bolts  
and Nuts for Overhead Line  
Construction."

Applicable Sizes : 5/8 inch, 6 through 12 inch length  
3/4 inch, 8 through 12 inch length

The following manufacturers have shown compliance with the applicable  
specifications:

A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Joslyn Mfg. and Supply Company  
Kortick Manufacturing Company  
\*McGraw-Edison  
Utilities Service Company



\*"Static proof" designs available.

ap-1  
July 1984

ap - Clamp, hot line  
Copper and Copperweld-copper Conductor

<u>Conductor Size</u>			
Copper	2/0	1/0	2 thru 6
Copperweld-copper	<u>      </u>	<u>2A</u>	<u>4A thru 8A</u>
Blackburn	PGH3	PGH3	PGH3
Fargo	GH-209	GH-209	GH-209
Weaver	IWS	IWS	IWS

Clamps listed below have springs and enclosed thread chambers.  
They are recommended for use in areas where severe corrosion  
or vibration trouble is experienced.

Anderson	BH-00	BH-00	BH-00
Chance	S1520CC	S1520CC	S1520CC
Electrical Specialty	BHC	BHC	BHC
Fargo	GH-100*	GH-100*	GH-100*
Ideal	3532	3532	3532
Penn-Union	HLC-020-LS	HLC-020-LS	HLC-020-LS

\*For use with CL Fuse, order GH-201

ap - Clamp, hot line  
ACSR with armor rods

Clamps listed below have spring action and enclosed thread chambers.

Conductor Size		4/0 & 3/0	2/0	1/0 & 2	4
	<u>Tap Conductor</u>				
Anderson	Aluminum	AH-7	AH-4	AH-4	AH-4
	Copper	AH-7-GP	AH-4-GP	AH-4-GP	AH-4-GP
Chance	Aluminum	S1540-AA	S1540-AA	S1530-AA	S1530-AA
	Copper	S1540-AC	S1540-AC	S1530-AC	S1530-AC
Electrical Specialty	Aluminum	-	AHC-2/0	AHC-2/0	AHC-2/0
	Copper	-	AHC-2/0 GP	AHC-2/0 GP	AHC-2/0 GP
Fargo	Aluminum	GH-102A	GH-102A	GH-101A	GH-101A
	Copper	GH-102AC	GH-102AC	GH-101AC	GH-101AC
Penn Union	Aluminum	-	-	HLCA-040	HLCA-040
	Copper			HLCA-040	HLCA-040
Utilco	Aluminum	-	HLC-397	-	HLC-40
Weaver	Aluminum	W-1066AA	W-1066AA	W-6336AA	W-6336AA

ar  
July 1984

ar - Wireholder

Applicable Specification: "REA Specification for Service Wireholders," D-15

	<u>With #22 Wood Screw</u>	<u>With 3/8" x 5" Bolt</u>
Chance	3-11-44	-
Dixie	D3-11-44	-
Joslyn	J089	-
McGraw-Edison	DW1R1	-
Porcelain Products	1986	-
Universal Clay Products	415	-



Note: For triplex type service cable see clevis type wireholders on page "bt."



as  
July 1984

as - Clevis, service swinging

Applicable Specifications: "REA Specifications for Service Swinging  
Clevises," D-7

	<u>Clevis Only*</u>	<u>Clevis with Wet Process Spool</u>	<u>Clevis with Dry Process Spool</u>
Chance	1948C	1948C-C909-1031	1948C-0606
Dixie	D1938	D1938-C	D1948-C
Joslyn	J1614	-	J1615
Kortick	K9260	K9141	K9142
McGraw-Edison	DC7S2	-	-
Utilities Serv.	32003	31003	31004

\*Catalog number does not include spool; for spool insulators see  
Item cm.

at-1  
July 1984

at - Guy Marker

8 Foot Length

Steel

Manufacturer

Full Round

Half Round

Joslyn

J1618

J1528

Kortick

K3729

-

McGraw-Edison

DG12G1

DG5G3

at - Guy Marker  
8 Foot Length  
Plastic or Fiberglass

<u>Manufacturer</u>	<u>Catalog Number</u>
Auburn Extrusions	TK-808 (Yellow) (with bolt type clamp)
Chance	96-PBG-2 (Gray) 96-PBG-2Y (Yellow) 96-PBG-20RG (Orange)
Chance*	96-FRG-GRY (Gray) 96-FRG-YEL (Yellow) 96-FRG-ORG (Orange)
Electrical Materials*	70-7 (Gray) 70-7 (Yellow) 70-7 (Green) 70-7 (Orange)
Joslyn	J1491Y (Yellow) J1491G (Gray)
Nordic	HRG-8 (Orange)
Preformed Line Products*	PG-5508 (Gray) PG-5518 (Yellow)
Radar Engineers*	6032 (Yellow)
Virginia Plastics*	TG-125-8G (Gray) TG-125-8Y (Yellow)
Virginia Plastics**	FG-8G (Gray) FG-8Y (Yellow)

\*For use with formed or automatic type deadends for guy strand; will not fit over bolt type guy clamps.

\*\*Available with either 1 or 2 bolt clamps.

Conditional List  
at  
July 1984

at - Reflective Guy Marker  
8-foot length

Plastic or Fiberglass

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>*Nordic</u> HG-815 yellow	1061 3/20/75	To obtain experience.

\*For use with formed or automatic type deadends for guy strand; will  
not fit over bolt type guy clamps.

**av - Conductor, ACSR**

**Applicable Specifications: ASTM Specification B 232-78  
(or latest revision)**

<b>Preferred Sizes:</b>	<b><u>Distribution</u></b>	<b><u>Transmission</u></b>
	4 - 6/1	1/0 - 6/1
	4 - 7/1	2/0 - 6/1
	2 - 6/1	3/0 - 6/1
	2 - 7/1	4/0 - 6/1
	1/0 - 6/1	266.8 kcmil - 26/7
	2/0 - 6/1	336.4 kcmil - 26/7
	3/0 - 6/1	477 kcmil - 26/7
	4/0 - 6/1	556.5 kcmil - 26/7
		795 kcmil - 26/7
		954 kcmil - 54/7

**The following manufacturers have shown compliance with the  
applicable specifications:**

**Alcan Cable**

**Aluminum Company of America**

**Anaconda Ericsson**

**Essex**

**Kaiser**

**Nehring**

**Noranda**

**Pirelli Cable**

**Reynolds**

**Southwire**

av - Conductor, copper

Applicable Specifications: ASTM Specification B 1-70 (or latest revision) for hard-drawn solid  
ASTM Specification B 3-63 (or latest revision) for soft or annealed solid  
ASTM Specification B8-72 (or latest revision) for hard-drawn stranded and soft stranded

Preferred Sizes:	Hard-drawn solid	4 and 6
	Soft or annealed solid	4 and 6
	Hard-drawn stranded	2x3, 1/0 x 7, 2/0 x 7
	Soft stranded	4 and 6

The following manufacturers have shown compliance with the applicable specifications:

Alcan Cable

Anaconda Ericsson

Essex

General Cable

Hatfield (Sizes 4 & 6)

Phelps Dodge

Rome Cable

Service Wire Company

Southwire



av - Conductor, Copperweld-copper

Applicable Specification: ASTM Specification B 229-71  
(or latest revision)

Preferred Sizes:	<u>Distribution</u>	<u>Transmission</u>
	8A	1/0 F
	6A	2/0 F
	4A	3/0 F
	2A	4/0 F

The following manufacturers have shown compliance with the applicable specification for the sizes indicated:

Anaconda Ericsson	(2A and smaller)
Copperweld Steel	(All sizes)
Southwire	(2A and smaller)

av - Conductor, Service  
(Single Conductor)

<u>Manufacturer</u>	<u>Aluminum</u>	<u>Copper</u>
Alcan Cable	x	x
Anaconda Ericsson	x	x
Conductor Products	x	
Essex	x	x
Kaiser	x	
Phelps Dodge	x	
Pirelli Cable	x	x
Reynolds	x	
Rome Cable	x	x
Southwire	x	x
Cablec	x	

Applicable Specification: IPCEA-NEMA Standard S-66-524

Insulation: Cross-linked thermosetting polyethylene or equal,  
meeting requirements of Sections 7.3.3 and 7.3.5.

Conductor: Physically and electrically equal to MHD copper or  
HD (EC-H19) aluminum, meeting requirements of Section 7.3.2.  
(Compact or compressed stranded conductor is acceptable.)

Marking: Manufacturer's name and type of insulation shall be clearly  
shown in durable markings on the surface of the insulation  
at intervals no greater than 24 inches.

av - Conductor, Service Cable  
(Triplex and Quadruplex)

<u>Manufacturer</u>	<u>Aluminum</u>	<u>Copper</u>
Alcan Cable	x	x
Anaconda Ericsson	x	x
Conductor Products	x	
Essex	x	x
Hendrix	x	x
Kaiser	x	
Phillips Cables, Inc. (Marked "Phillips W")	x	
Pirelli	x	x
Reynolds	x	
Rome Cable	x	x
Southwire	x	x

Applicable Specifications: REA Specification D-2, Specifications for  
600 Volt Neutral-Supported Secondary Service  
Drop Cables.

av - Conductor, Aluminum Alloy

Applicable Specification: ASTM Specification B399-78

Preferred Sizes:

<u>DISTRIBUTION</u>			<u>TRANSMISSION</u>		
<u>6201</u>		<u>ACSR Equiv.</u>	<u>6201</u>		<u>ACSR Equiv.</u>
48,690 cmil - 7 str.*		4	123,300 cmil - 7 str.**		1/0
77,470 cmil - 7 str.*		2	155,400 cmil - 7 str.**		2/0
123,300 cmil - 7 str.		1/0	195,700 cmil - 7 str.**		3/0
155,400 cmil - 7 str.		2/0	246,900 cmil - 7 str.		4/0
195,700 cmil - 7 str.		3/0	312,800 cmil - 19 str.	266,800 cmil	
246,900 cmil - 7 str.		4/0	394,500 cmil - 19 str.	336,400 cmil	
			559,500 cmil - 19 str.	477,000 cmil	
			652,400 cmil - 19 str.	556,500 cmil	
			927,200 cmil - 37 str.	795,000 cmil	

\*Not recommended for multiphase lines with span lengths exceeding 300 ft.

\*\*Not recommended for suspension type construction.

The following manufacturers have shown compliance with the applicable specifications:

<u>Manufacturer</u>	<u>Type</u>
Alcan	6201
Alcoa	6201
Kaiser	6201
Reynolds	6201
Southwire	6201

av - Conductor

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Copperweld Steel</u>		
Alumoweld-aluminum	863	To obtain experience.
6/1 ACSR/AW, #2, #1/0, #2/0, #4/0	4/13/67	
4/3 AWAC, #4, #2, #1/0	984 2/3/72	To obtain experience.
<u>Reynolds Metals</u>		
5005 Aluminum Alloy #4-7 strand through 4/0-7 strand; 281,460 cmil-19 strand (266,800-18/1 ACSR equiv.) through 312,760 cmil-19 strand (266,800-26/7 ACSR equiv.)	803 10/22/64	Where suspension insulator type of construction is employed on transmission lines, the minimum size of this conductor to be used is 4/0 and above.
<u>Southwire</u>		
5005 Aluminum Alloy #4-7 strand through 4/0-7 strand; 557,500 cmil-19 strand (477,000-26/7 ACSR equiv.)	999 8/31/72	Where suspension insulator type of construction is employed on transmission lines, the minimum size of this conductor to be used is 4/0 and above.
<u>Alcoa</u>		
795 kcmil ACSR/AW 26/7	1247 11/18/82	To obtain experience.

aw  
July 1984

aw - Washer, Spring

1/4 x 1-3/4" x 3-1/2"

<u>Manufacturer</u>	<u>Bolt Size</u>		
	<u>5/8"</u>	<u>3/4"</u>	<u>7/8"</u>
Chance	3540	3541	--
Joslyn	J3540	J3541	J3542
Kortick	K2909	--	--
Fastex (ITW) "Ramp Lok"	1-760-21	1-760-31	1-760-41
McGraw-Edison	DF17W3	DF17W4	DF17W5
Power Line Hardware	SCW-58	SCW-34	SCW-78



## ax - Cutout and Arrester, Combination

Nominal System Voltage Cutout Max. Voltage Rating	For 12.5Y/7.2 kV		For 13.2Y/7.6 kV		For 24.9Y/14.4 kV	
	7.8 kV	15 kV	15 kV	15 kV	18 kV	27 kV
Application						
Cutout Current Rating	1Ø Trans. 50*	1Ø Sect. 100	3Ø Bank 3Ø Sect. 1Ø Sect. 100	1Ø Trans. 50*	1Ø Trans. 50*	3Ø Bank 3Ø Sect. 1Ø Sect. 100
Manufacturer	Chance	General Electric	Joslyn (valve) (valve) (valve)	Kearney	McGraw-Edison	
Mounting	Crossarm Transformer	Crossarm (L) Transformer	Crossarm (valve) Transformer	Crossarm Transformer	Crossarm (L) Transformer	
Catalog Numbers						
	C71A-112PB Series	C71A-112PB Series	C71A-112PB Series	C71A-112PB Series	C71C-211PB Series	
	9F80	9F80	9F80	9F80	9F80	
	9F78A	9F78A	9F78A	9F78A	9F78A	
	J9237-Q6 J9238-1Q	J9237-Q2 J9237-Q2/B	J9237-Q2/R J9237-Q2/B/R	J9237-Q6 J9238-1Q	J9267-Q6 J9268-1Q	J9267-Q2 J9267-Q2/B
	294072	123511	294073	123512	123514	
	AFS800M010	AFS301B Series	AFS301C Series	AFS800M010	AFS800M018	AFS300D Series

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

\*These cutouts have open links and must not be used where fault currents are high or for sectionalizing.

(L) Indicates loadbreak type is available.

ax - Cutout and Arrester, Combination

Nominal System Voltage Cutout Max. Voltage Rating	For 7.2/12.5 kV Wye		For 7.6/13.2 kV Wye		For 14.4/24.9 kV Wye	
	7.8 kV	15 kV	15 kV	15 kV	50*	100
Application	For 1Ø Transformers	For 3Ø Banks	For 1Ø Trans.	For 3Ø Banks	For 1Ø Trans.	For 3Ø Banks
Cutout Current Rating	& 1Ø Sectionalizing	& 3Ø Sect.	& 1Ø Sect.	& 3Ø Sect.	& 1Ø Sect.	& 3Ø Sect.
Manufacturer Type Mounting	50*	100	50*	100	50*	100
	Catalog Numbers					
Westinghouse Crossarm Electric	7.8 NCX/ 9 LVG	15 NCX/10 LVG	15 NCX/10 LVG	15 NCX/10 LVG	24.9 NCX/ 18 LVG	24.9 NCX/ 18 LVG
Corporation Crossarm (L)	7.8 LBU-II/ 9 LVG	15 LBU-II/10 LVG	15 LBU-II/10 LVG	15 LBU-II/10 LVG	24.9 LBU-II/ 18 LVG	24.9 LBU-II/ 18 LVG

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

\*These cutouts have open links and must not be used where fault currents are high or for sectionalizing.

(L) Indicates loadbreak type is available.

ay  
July 1984

ay - Cutout and gap, combination

<u>Manufacturer</u>	<u>Type of Mounting</u>	<u>7.2/12.5 kV 50 amp*</u>	<u>14.4/24.9 kV 50 amp*</u>
RTE	Transformer	32-2674A03	32-2674A06

\*These combinations contain the open-link type of cutout.

az  
July 1984

az - Pole Numbers and Letters, Metal

(See Drawing M52-3)

Manufacturer

Almetek Industries, Inc.

Premax Products

Catalog No.

"E-Z Tags"

Order by description

1523

ba - Bolt, Angle Eye

Thimble Type

Applicable Specification: ANSI C135.4, "Standards for Galvanized Ferrous Eye Bolts and Nuts for Overhead Line Construction."

Applicable Sizes : 5/8 inch, 6 through 12 inch length  
3/4 inch, 8 through 12 inch length

The following manufacturers have shown compliance with the applicable specifications:

A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Joslyn Mfg. and Supply Company  
Kortick Manufacturing Company  
\*McGraw-Edison  
Utilities Service Company



\*"Static proof" designs available.

bb  
July 1984

bb - Brace, sidearm vertical

	<u>26" brace 24" bolt-hole spacing</u>	<u>50" brace 24" bolt-hole spacing</u>
Dixie	D6986	D6987
Joslyn	J1536	J1537
Kortick	K1931	K1932
McGraw-Edison	DB1 V1	DB1 V3
Utilities Service	5249	5250



be - Recloser, oil circuit  
7.2/12.5 kV

Lexington  
Switch and  
Controls

Single phase - Type HRL-50, ratings 5-50 amperes,  
maximum interrupting capacity 1250 amperes.  
Single phase - Type HR4-100, ratings 25-100 amperes,  
maximum interrupting capacity 2000 amperes.  
Single phase - Type HRL-280, ratings 25-100 amperes,  
maximum interrupting capacity 4000 amperes.

McGraw-Edison

Single phase - Type H, ratings 5-50 amperes, maximum  
interrupting capacity 1250 amperes.  
Single phase - Type 4H, ratings 5-100 amperes, maximum  
interrupting capacity 2500 amperes.  
Single phase - Type L, ratings 25-100 amperes, maximum  
interrupting capacity 4000 amperes.  
Three phase - Type 6H, ratings 5-100 amperes, maximum  
interrupting capacity 2500 amperes.  
\*Three phase - Type RX, ratings 25-400 amperes, maximum  
interrupting capacity 6000 amperes.  
\*Three phase - Type W, ratings 100 to 560 amperes,  
maximum interrupting capacity 10,000 amperes.  
\*#Three phase - Type RXE, rating 400 amperes, maximum  
interrupting capacity 6000 amperes.  
\*#Three phase - Type WE, rating 560 amperes, maximum  
interrupting capacity 10,000 amperes.  
\*#Three phase - Type ME, ratings 560 or 1120 amperes,  
maximum interrupting capacity 16,000 amperes.

14.4/24.9 kV

McGraw-Edison

Single phase - Type E, rating 5-100 amperes, maximum  
interrupting capacity 2500 amperes. Available with  
shunt lockout solenoid for three-phase operation.  
\*#Three phase - Type RVE, rating 400 amperes, maximum  
interrupting capacity 6000 amperes.  
\*Three phase - Type WV, rating 560 amperes, maximum  
interrupting capacity 8000 amperes.  
\*#Three phase - Type WVE, rating 560 amperes, maximum  
interrupting capacity 8000 amperes.  
\*Single phase - Type 4E, rating 50-280 amperes, maximum  
interrupting capacity 4000 amperes.  
\*#Three phase - Type CXE, rating 560 amperes, maximum  
interrupting capacity 16,000 amperes, maximum voltage 34.5 kV.  
\*Ratings greater than 100 amp. for 7.2/12.5 kV application, and  
greater than 200 amp. for 14.4/24.9 kV application, are acceptable  
only with ground trip device.

#Not acceptable with load current, bushing CT battery chargers.

be-2  
July 1984

be - Reclosers, vacuum interrupter  
7.2/12.5 kV

McGraw-Edison

\* Three phase - Type VSA, ratings  
100 - 560 amperes

\* Ratings greater than 100 amp. for 7.2/12.5 kV application, and greater than 200 amp. for 14.4/24.9 kV application, are acceptable only with ground trip devices.

#Not acceptable with load current, bushing CT battery chargers.

be - Recloser, oil circuit  
7.2/12.5 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>*Lexington Switch and Controls</u>		
Three phase oil circuit	808	
recloser, 50, 100 and 280	1/7/65	To obtain operating
ampere frames, Type HR-3	1087(4/1/76)	experience.
<u>*Westinghouse</u>		
Three phase oil circuit		To obtain operating
recloser (Shunt trip with		experience.
static or relay type		
controls)		
Type ES-400 (15-400 amperes)	1070	
Type ES-560 (15-560 amperes)	7/24/75	
Type ESM-560 (100-560 amperes)		
Type ES-105 (15-560 amperes)	1077(11/13/75)	

- \* Ratings greater than 100 amp. for 7.2/12.5 kV application, and greater than 200 amp. for 14.4/24.9 kV application, are acceptable only with ground trip devices.

Conditional List  
be(2)  
July 1984

Jt

be - Recloser, oil circuit

<u>Manufacturer</u>	<u>Meeting No and Date</u>	<u>Conditions</u>
<u>*Lexington Switch and Controls</u>		
Oil circuit recloser,	620	To obtain operating experience.
14.4/24.9 kV	4/18/57	
Single phase-HR1,	1080	
rated 100 amperes	12/23/75	
Three phase-HR3,		
rated 100 amperes		

\*Ratings greater than 100 amp. for 7.2/12.5 kV application, and greater than 200 amp. for 14.4/24.9 kV application, are acceptable only with ground trip devices.

be - Reclosers, vacuum interrupter

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
*McGraw-Edison		
Single-phase, type V4H, maximum voltage 14.4 kV for 7.2/12.5 and 7.62/13.2 kV	921 6/26/69	To obtain experience.
Three-phase, type V6H, maximum voltage 14.4 kV for 7.2/12.5 and 7.62/13.2 kV	921 6/26/69	To obtain experience.
#Three-phase type VSR rated 400 amperes continuous, maximum voltage 14.4 kV for 7.2/12.5 kV and 7.62/13.2 kV	953 10/8/70	To obtain experience.
#Three-phase type VSML rated 560 amperes continuous, maximum voltage 14.4 kV for 7.2/12.5 kV and 7.62/13.2 kV	953 10/8/70	To obtain experience.
Three-phase type VW rated 560 amperes continuous, maximum voltage 14.4 kV for 7.2/12.5 kV and 7.62/13.2 kV	1005 12/7/72	To obtain experience.
#Three-phase type VWE rated 560 amperes continuous, maximum voltage 14.4 kV for 7.2/12.5 kV and 7.62/13.2 kV	1005 12/7/72	To obtain experience.
#Three-phase type VWVE rated 560 amperes continuous, maximum voltage 27 kV for 14.4/24.9 kV	1014 4/12/73	To obtain experience.

\*Ratings greater than 100 amp. for 7.2/12.5 kV application, and greater than 200 amp. for 14.4/24.9 kV application, are acceptable only with ground trip devices.

#Not acceptable with load current, bushing CT battery chargers.



Conditional List

be(4)

July 1984

be - Reclosers, vacuum interrupter

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>*McGraw-Edison (Cont.)</u>		
Three-phase type VWV rated 560 amperes continuous, maximum voltage 27 kV for 14.4/24.9 kV	1021 7/19/73	To obtain experience.
<u>Westinghouse</u>		
Three-phase Type ESVA rated 560/800 amps continuous, 12,000 amps symmetrical, maximum voltage 15.5 kV for 12.5/7.2 kV	1259 5/19/83	To obtain experience
Three-phase Type ESMVA rated 560 amps continuous, 16,000 amps symmetrical, maximum voltage 15.5 kV for 12.5/7.2 kV	1259 5/19/83	To obtain experience
Three-phase Type ESV rated 800 amps continuous, maximum voltage 38 kV for 24.9/14.4 kV	1117 6/23/77 1239 7/29/82	To obtain experience

\*Ratings greater than 100 amp. for 7.2/12.5 kV application, and greater than 200 amp. for 14.4/24.9 kV application, are acceptable only with ground trip devices.



bh  
July 1984

bh - Clevis, Service Deadend

Applicable Specification: "REA Specification for Service Deadend  
Clevises," D-8

<u>Manufacturer</u>	<u>Clevis Only*</u>	<u>Clevis with dry process spool</u>	<u>Clevis with wet process spool</u>
Chance	0341	0341-0606	0341-C909-1931
Dixie	D0341	D0341-D	D0341-W
Joslyn	J0313	J0314	-
Kortick	K9250	K9100	K9099
McGraw-Edison	DC3F1	-	-
Utilities Service	32136	31136	36136

\*Catalog number does not include spool; for spool see Page cm.

bi  
July 1984

bi - Gain, Pole

For use with rectangular crossarms

Chance	4092
Continental	CAG-44-5
Flagg (MIF)	PX252
Joslyn	J4092

For braceless crossarms (narrow profile construction)

Bethea Hardware	GCAF-6A
Continental	DEA-65-10A
Flagg (MIF)	PX182A

Transmission

Grid Gains

	<u>Sizes in inches</u>	
	<u>4" x 4"</u>	<u>4" x 9"</u>
Barron Bethea	PG-44	PG-945
Bethea Hardware	GSF-44-7	GSFT-95-7
Continental	GGSF-4040-7	GRF-9045-7
Flagg (MIF)	PX122	PX260
Joslyn	J6064	J22533-A

bj - Guy Hook

Applicable Specification: Edison Electric Institute Specification TD-11  
1951, "Specifications for Guy Hooks and Guy  
Strain Plates"

Dixie	D6584
Joslyn	J1019
Kortick	K4031
McGraw-Edison	DG4H1
Utilities Service	5310
Chance	6584



bk  
July 1984

bk - Guy plate

Applicable Specifications:

Strain Type: Edison Electric Institute Specification TD-11  
1951, "Specifications for Guy Hooks and Guy  
Strain Plates"

Lift Type : None

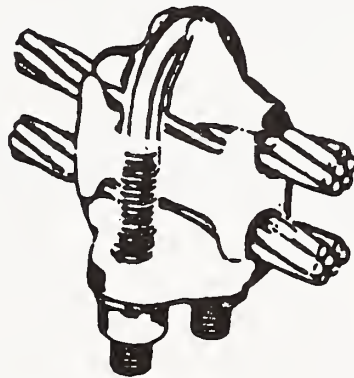
	Strain Type <u>4" x 8" x 14 guage</u>	Lift Type <u>2½" x 7" x ¼", 2 hole</u>
Chance	6575	7898
Dixie	D6575	D7888
Joslyn	J1034	J7894
Kortick	K4015	K3511
McGraw-Edison	DG1M2	DG4M2
Power Line Hardware	GSP-1	
Utilities Service	5351	C434



bn - Cl amp, loop deadend

For ACSR

	3 / 0	2 / 0	1 / 0	2	4
ALCOA	-	413	413	412	411
Anderson/ Sq . D	LC-74B	LC-71B	LC-70B 1	LC-70B	LC-70B
Bethea Hardware	ALD-7373-U	ALD-34-U	ALD-1313-U	ALD-1313-U	ALD-1313-U
Blackburn	DLC23	DLC2106	DLC2106	DLC2106	DLC2106
Burndy	-	-	UW 25R	UW 2R	UW 2R
C & R	-	-	CRLD-10	CRLD-10	CRLD-10
Fargo	GA-145	GA-145	GA-144	GA-144	GA-144
Weaver	-	-	WDE-10	WDE-2	WDE-2



bo  
July 1984

bo - Shackle, anchor

<u>Manufacturer</u>	<u>Catalog Number</u>
Anderson/Square D	AS-25
Bethea Hardware	ASH-45
Chance	5801
Continental	AS-25-5-4
Dixie	D5801
Brown Boveri Electric (ITE)	3022
Joslyn	J2742
Knox	3022
Kortick	K4481
Lapp	33852
Lindsey	3260
McGraw-Edison	DC7J1
Ohio Brass	13722
Power Line Hardware	AS-1
Utilities Service	4106



br  
July 1984

br - End Link

<u>Manufacturer</u>	<u>Catalog Number</u>
Bethea Hardware	CL-5
Brown Boveri Electric (ITE)	3082-HT
Continental	L-5
Joslyn (Brewer-Titchener)	BT-3082-HT
Knox	3082-HT
Lapp	64 15-HT
Ohio Brass	792 72
Lindsey	3403

bs  
July 1984

bs - Bolt, single upset

Applicable Specifications: "REA Specifications for Single and  
Double Upset Spool Bolts," D-5

Diameter, inches	5/8	5/8	5/8	5/8
Length, inches	7	8	9	10
Chance		7741	7741½	7742
Dixie	D7740	D7741	D7741½	D7742
Joslyn	-	J2342½	J2343½	J2344½
Kortick	K4929	K4950	K4930	K4951
McGraw-Edison*	DC2E11	DC2E3	DC2E4	DC2E5
Utilities Service	31052½	31053	31053A	31054



\*Static proof designs available.

bt  
July 1984

bt - Wireholder, clevis type  
with No. 24 wood screw

(For use with triplex type service cable, Drawing KLOC-A)

Chance	0192*
Dixie	D075*
Joslyn	J075*
McGraw-Edison	DW5R1*

\*Catalog number does not include insulator. Use secondary type spool insulator with 1-3/4-inch groove diameter. See page cm.

bu  
July 1984

bu - Connector, grounding  
for transformer or other equipment

<u>Manufacturer</u>	<u>Copper Alloy</u> <u>1</u>	<u>Plated Copper Alloy</u> <u>2</u>	<u>Aluminum Alloy</u> <u>3</u>
Anderson/Square D	GTCL-23A	GTCL-23A-TP	
ITT Blackburn	TTC-4	TTC2P	
Burndy	EQC632C	EQC632C-TN	
Dossert	TGCL8-50	TGCL8-50-SN	
Fargo	GC-207	GC-207P	GA-220
Penn-Union		GSE-C1TN	
Power Line Hardware	TGL-110	TGL-110P	
Tanner		GET-1-TN	
ITT Weaver	TGC-4	TGC-2P	

1 - For use with copper type ground wire.

2 - For use with both copper and aluminum type ground wire.

3 - For use with aluminum type ground wire.

bv, Rods, armor

Aluminum or aluminum alloy rods for use on ACSR

Blackburn	Formed Type
Dulmison	Formed Type
Helical Line Products	Formed Type
Preformed Line Products	Formed Type
Southwire	Straight

Copperweld rods for copper or CWC conductor

Helical Line Products	Formed Type
Preformed Line Products	Formed Type

Alumoweld rods for aluminum clad steel (Alumoweld)  
overhead ground wire

Helical Line Products	Formed Type
Preformed Line Products	Formed Type

Bronze rods (10 inch length) for jumper protection

Preformed Line Products	Formed Type
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bx  
July 1984

bx - Splice, automatic

<u>Copper</u>	<u>Fargo</u>	<u>Reliable</u>
6	GL-111	61
4	GL-112	41
2 x 3	GL-115	-
1/0 x 7	GL-117	107
2/0 x 7	GL-118	207
3/0 x 7	GL-119	307
4/0 x 7	GL-120	407
<u>CWC</u>		
8A	GL-112	
6A	GL-113	47
4A	GL-115	27
2A	GL-117	
<u>ACSR</u>	GL-400 Series*	7650 Series*
<u>Aluminum Alloy (6201 and 5005)</u>	GL-100A Series GL-1000A Series	AL55 Series

\*For use on distribution only.



bx - Splice, automatic

**DISTRIBUTION**

**Meeting No.  
and Date**

**Conditions**

**Manufacturer**

**Fargo**  
AWAC 4-4/3  
GLA-105  
AWAC 2-4/3  
GLA-110  
AWAC 1/0 - 4/3  
GLA-115

1087  
4/1/76

To obtain experience.

by  
July 1984

by - Deadend, Automatic and Formed Type

<u>Fargo</u>	<u>Reliable</u>	<u>Conductor Size</u>	
		<u>Cu</u>	<u>CWC</u>
GD-515	27-SDS	-	4A
GD-513	47-SDS	-	6A
GD-512	-	-	8A
GD-515	271	2 x 3	-
GD-512	41LD	4	-
GD-511	61LD	6	-

ACSR

*Fargo	GD-400 Series
*Preformed	OG-9360 thru 9366 #OHDE-9534 thru 9540, 4577
*Reliable	7650 Series

# May only be used with a spool insulator (Item cm) and appropriate clevis for neutral and secondary applications.

Aluminum Alloy  
(6201 and 5005)

Fargo	GD-A Series
Preformed	OG -9360 thru 9366
Reliable	AL Series

\*For use on distribution only.

by  
July 1984

by - Deadends, automatic and formed type

FORMED TYPE

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Preformed Line Products</u>		
AWAC 4 - 4/3	993	To obtain experience.
DG-4560	6/8/72	
AWAC 2 - 4/3		
DG-4562		
AWAC 1/0 - 4/3		
DG-4565		

AUTOMATIC TYPE

<u>Reliable</u>		
AWAC 4-4/3	1026	To obtain experience.
5201	9/27/73	
AWAC 2-4/3	1035	
5202	2/21/74	
AWAC 1/0-4/3		
5204		
 <u>Fargo</u>		
AWAC 4-4/3	1087	To obtain experience.
GDA-235	4/1/76	
AWAC 2-4/3		
GDA-240		
AWAC 1/0-4/3		
GDA-245		

bz  
July 1984

bz - Switch, oil

7.2/12.5 kV

	<u>Type</u>	<u>Description</u>
General Electric	FKC-2	Single and three phase, manual, 200 amp.
	FKC-2*	Single and three phase, remote control, 200 amp.
McGraw-Edison	N	Single phase, manual, 200 amp.
	NM	Gang operated, manual, 200 amp.
	NR*	Single phase, remote elec. control, 200 amp.
	VH	Three phase, manual, 400 amp.
	VM	Three phase, remote manual control, 400 amp.
	VR*	Three phase, remote elec. control, 400 amp.
Westinghouse	CSL**	Single phase, manual and remote manual or elec. control, 200 amp. Three phase, remote manual or elec. control, 200 amp.

\*Control equipment should be selected in accordance with the requirements of individual installations.

\*\*This item is also available in a special design for use in areas where corrosion is a serious problem.

bz - Switch, oil

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u>		
Capacitor oil switch	940	To obtain experience.
Type TSC, 38 kV max.	4/2/70	
100 ampere capacitor switch		
300 ampere load switch		
 Oil switch with	 1046	 1. To obtain experience.
125 kV BIL accessory	7/25/74	
Type NR, 15 kV, single-		2. For use on single-
phase, remote electric		phase taps of
control, 200 amp. at		14.4/24/9 kV multi-
75 to 100 percent power		grounded wye systems.
factor.		

cg - Switch, air, three-pole, group-operated  
NEMA standard switches for station and line structures

<u>Manufacturer</u>	<u>Acceptable Mounting on Structures</u>	<u>Tilting Ins. Type kV</u>	<u>Vertical Break Type kV</u>	<u>Side Break Type kV</u>	<u>Center Break Type kV</u>	<u>Double Break Type kV</u>
Brown Boveri Elec. (ITE)	Horizontal		TTR6 15-345			
A. B. Chance	Horizontal Phase over Phase Vertical			D6(L)15-34.5 D6(L)15-34.5 D6(L)15-34.5		
Johnson	Horizontal		VIP 15-230	LS 15-69	M 15-230	
Joslyn (Hi-Voltage)	Horizontal Horizontal		RF-2 (VL)15-230	RB-1 (VL)15-25 RB-1* 15-115		
Kearney	Horizontal	NE-2 15-34.5	AR 60-P 15-69			
MEMCO	Horizontal Horizontal	AgF 15-69 AgC 15-69	EA 15-345		EE 69-230	
G & W Electric Company	Horizontal		MK-40 15-69	PMB-40A 15-69	LPC 69-230	
Powerdyne (Kearney)	Horizontal Phase over Phase				V2-V4 15-230 V2 15-23	
ITT Royal Switchgear	Phase over Phase Horizontal			RG-63(L) 15-69 RSL-L (L) 15-69		

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

\* These switches may be purchased with reduced voltage vacuum interrupters and may be applied for loop sectionalizing duty when peak recovery voltage does not exceed 25 kV.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.



cg - Switch, air, three-pole, group-operated  
NEMA standard switches for station and line structures

<u>Manufacturer</u>	<u>Acceptable Mounting on Structures</u>	<u>Tilting Ins.</u>		<u>Vertical Break</u>		<u>Side Break</u>		<u>Center Break</u>		<u>Double Break</u>	
		<u>Type</u>	<u>kV</u>	<u>Type</u>	<u>kV</u>	<u>Type</u>	<u>kV</u>	<u>Type</u>	<u>kV</u>	<u>Type</u>	<u>kV</u>
S & C	Horizontal			Alduti(L)15-34.5		Alduti(L)15-25				Alduti(L)34.5-46	
	Phase over Phase			Alduti(L)15-25		Alduti(L)15-25				Alduti(L)34.5-46	
	Vertical			Alduti(L)*15-34.5		Alduti(L)15-25				Alduti(L)*34.5-46	
SEECO	Phase over Phase					GOABS(VL)15-69					
Siemens-Allis	Horizontal			TA(VL) 15-69		SSB-T 15-69		CCB-115-230			
				AVB(VL)**115-345				CBL-2 115-230			
Southern States	Horizontal			EV 15-230		57K 15-69					
Turner	Phase over Phase					(1D, 2D, 3D)(VL) 15-161					
	Horizontal					1D(VL) 15-161					
USCO	Horizontal			TH1(VL) 15-161							
	Horizontal			AGT(VL)**15-230		GSH-4(VL)15-138		AGCH** 15-345			
	Phase over Phase					GSH-4(VL)15-138		AGCH-V**34.5-230			

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

\* These switches, except 34.5 kV Alduti vertical break, are available and accepted in combination with the S & C Type SMD substation fuse cutouts listed on page af-3.

\*\* Also available in bronze in some ratings.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.



cg - Switch, air, three-pole, group-operated

(Not Suitable for Substation Use)

<u>Manufacturer</u>	<u>Acceptable Mounting</u>	<u>Vertical Break</u>		<u>Side Break</u>		<u>Center Break</u>	
		<u>Type</u>	<u>kV</u>	<u>Type</u>	<u>kV</u>	<u>Type</u>	<u>kV</u>
Chance	Horizontal			D6(L)	15-34.5		
	Phase over Phase			D6(L)	15-34.5		
	Vertical			D6(L)	15-34.5		
K-P-F	Horizontal	SV-202	23	A202-A208	15-110		
	Phase over Phase			A202	15-23		
	Phase over Phase			W202	15-23		
	Phase over Phase			MD202	15-23		
Powerdyne (Kearney)	Horizontal			S	15-23	V2	15-23
	Phase over Phase			S	15-23	V2	15-23

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, air, three-pole, group-operated  
(Factory Preassembled)

<u>Manufacturer</u>	<u>Acceptable Mounting on Structures</u>	<u>Vertical Break</u>		<u>Side Break</u>	
		<u>Type</u>	<u>kV</u>	<u>Type</u>	<u>kV</u>
Chance	Horizontal (A)			D7(L)15-27	
	Phase over			D7(L)15-27	
	phase (A)				
	Vertical (A)			D7(L)15-27	
	Horizontal (B)			D7(L)34.5	
				(200 kV BIL)#	
	Phase over			D7(L)34.5	
	phase (B)			(200 kV BIL)#	
	Vertical (B)			D7(L)34.5	
				(200 kV BIL)#	
S & C	Horizontal (A)			Alduti(L)15-25	
	Phase over				
	phase (A)			Alduti(L)25	
	Vertical (A)			Alduti(L)15-25	
	Phase over	Alduti(L)34.5		Alduti(L)34.5	
	phase (B)	(200 kV BIL)#		(200 kV BIL)#	
	Vertical (B)	Alduti(L)34.5			
		(200 kV BIL)#			

(L) Means gas or solid material full-load interrupters are accepted and available.

# Accepted for transmission use only, provided the steel crossarm base is grounded with an adequate grounding connector.

(A) Not suitable for substation use.

(B) NEMA standard switches for station and line structures.

NOTE: Switches with factory-assembled crossarm type bases must have nonconducting crossarm type bases, nonconducting braces, and insulated interphase and control rods, except as otherwise noted.

Conditional List  
cg(1)  
July 1984

cg - Switch, air, three-pole, group-operated

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Southern States</u>		
"Pole-Pak"	800	To obtain experience.
15-23 kV	8/20/64	
Type ES; 15, 23 and 34.5 kV (horizontal upright models only)	897 7/11/68	<ol style="list-style-type: none"> <li>1. To obtain experience.</li> <li>2. For 15 kV and 23 kV distribution lines: insulated interphase and control rod spacers required. See REA Drawings M3-15 and VM3-16.</li> <li>3. NEMA insulators and steel interphase base required for trans- mission line structure as in TM-3.</li> <li>4. Acceptable on steel substations 15 through 34.5 kV with NEMA insulators and uninsulated inter- phase rods.</li> </ol>
Type 57L sidebreak, 115-161 kV, 600 and 1200 amp., horizontal upright	1067 6/12/75	To obtain experience.
<u>G &amp; W Electric Company</u>		
Type MK-40A	912	1. To obtain experience.
15 kV thru 230 kV (horizontal upright mounting)	2/20/69	<ol style="list-style-type: none"> <li>2. Insulated interphase and control rods required on 15 kV and 23 kV models used on wood structures.</li> <li>3. Steel interphase base required when mounted as in REA Drawing TM-3.</li> </ol>

cg - Switch, air, three-pole, group-operated

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>G &amp; W Electric Company (Cont'd)</u>		
"Mark 40" 115 kV thru 345 kV (horizontal upright mounting)	1005 12/7/72	To obtain experience.
Type LPV, 3-pole 72.5-272 kV, 1200 amp., 1600 amp., 2000 amp., center sidebreak for horizontal mounting	1064 5/1/75	To obtain experience.
<u>Siemens-Allis</u>		
Type CBL-T, 15-69 kV 600 and 1200 amp (center break, horizontal upright mounting)	1100 10/21/76	1. To obtain experience.  2. Insulated interphase and control rods require on 15 kV and 25 kV models used on wood structures.
<u>Morgan</u>		
Type VBV(VL), Vertical break vee Pole top mtg., 15-34.5 kV H-frame mtg., 46-230 kV Substation mtg., 15-230 kV	1056 1/2/75 1146 8/31/78 1281 5/31/84	1. To obtain experience.  2. Pole mounted switches must be supplied with insulated interphase and control rods. (Same as above.)
Type CBV, center break vee Horizontal pole top mounting, 15-34.5 kV Phase-over-phase mounting, 15-23 kV H-frame and substation mounting, 15-230 kV	1056 1/2/75 1281 5/31/84	

(L) Means full-load interrupter accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

cg - Switch, Air, Three-Pole, Group-Operated

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>K-P-F</u>		
Type A202 (L) horizontal-mounted and Types A202 (L), W202 (L) and MD202 (L) phase-over-phase mounted with quick break loadbreak device.	1137 4/20/78	1. To obtain experience. 2. For 15 kV distribution lines only. 3. Insulated interphase and control rods required.
<u>SEECO</u>		
GOABS(VL) Vacuum interrupter type 115-161 kV	1201 12/4/80	To obtain experience
<u>S &amp; C</u>		
Line-Rupter with SF <sub>6</sub> interrupter Horizontal mounted 69-230 kV Vertical mounted 69-161 kV	1202 12/18/80	To obtain experience

(L) Means full-load interrupter accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

ci - Clevis, Thimble, Side-Opening

Numbers listed will accommodate: No. 6 thru 2/0 Copper  
No. 8A thru 2A Copperweld-Copper  
No. 4 thru 3/0 ACSR

Brown Boveri Electric(ITE)	2400
Joslyn (Brewer Titchener)	2401
Knox	2401
McGraw-Edison	DM5C1
Ohio Brass	82825



cj - Pole Ground Wire

Soft annealed iron, BB Grade, Class C galvanizing  
(For pole protection only)

<u>Manufacturer</u>	<u>Size</u> <u>1.15 Ohms/1000 ft., max.</u>
Bethlehem Steel	3-wire, 5/16 inch
Indiana Steel and Wire	3-wire, 5/16 inch
Southwire	3-wire, 5/16 inch
U. S. Steel	3-wire, 5/16 inch

Copper, soft annealed solid  
ASTM Specification B3

Manufacturer

(See page av-2)

Aluminum (for above ground use only)  
Three-quarter hard-drawn EC grade

Manufacturer

(See page av-1)

Aluminum Alloy (for above ground use only)

<u>Manufacturer</u>	<u>Type</u>
ALCAN	6201
ALCOA	6201
American Electrical	6201
Kaiser	6201
Reynolds	5005
Southwire	6201, 5005

Copper-Clad Steel, Annealed 40 percent Conductivity

<u>Manufacturer</u>	<u>Size</u>
Copperweld*	No. 6

\*Not for use on distribution when neutral is larger than #1/0 ACSR.



cj - Pole Ground Wire  
Aluminum Alloy (for above ground use only)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Alcoa</u> 8177	1248 12/2/82	To obtain experience.

ck  
July 1984

ck - Clamp, anchor rod bonding

For Standard and Drive Type Rods

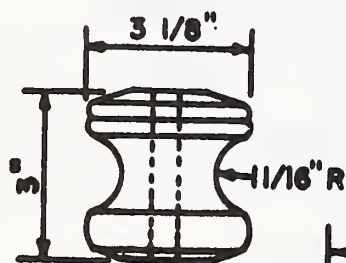
<u>Diam. of Rod</u>	<u>Type of Eye</u>	<u>5/8"</u>	<u>3/4"</u>	<u>1"</u>
C & R Products	Single	CRBC-1	CRBC-1	CRBC-1
	Twin	CRBC-2	CRBC-2	CRBC-2
	Triple	-	CRBC-3	CRBC-3
Chance	Single	G5060	G5060	G5060
	Twin	G5061	G5061	G5061
	Triple	-	G5063	G5063
Dixie	Single	D3143	D3143	D3143
	Twin	-	D3144	D3144
	Triple	-	D3145	D3145
Joslyn	Single	3230	3230	3230
	Twin	-	3231	3231
	Triple	-	3233	3233
Kortick	Single	K3147	K3147	-
	Twin	-	K3148	K3148
	Triple	-	K3149	K3149
McGraw-Edison	Single	DA1B1	DA1B1	DA1B1
	Twin	DA2B1	DA2B1	DA2B1
Utilities Serv.	Single	CG5060	CG5060	-
	Twin	-	CG5061	CG5061
	Triple	-	CG5063	CG5063

For Power Installed Screw Anchors

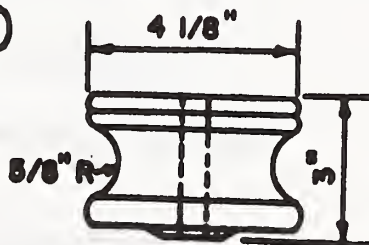
C & R Products	Single	CRBC-4	CRBC-5	-
Chance	Single	G5067	G5068	-
Joslyn	Single	PIBC-4	PIBC-5	-

cm - Insulator, Spool

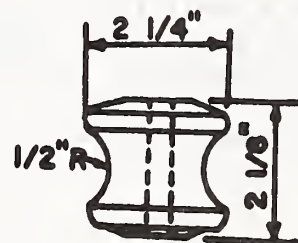
Type:	<u>Secondary (Wet Process)</u>		<u>Service</u>	
			<u>Wet Process</u>	<u>Dry Process</u>
Groove Diameter:	<u>1-3/4"</u>	<u>3"</u>	<u>1-3/8"</u>	<u>1-3/8"</u>
Chance	C909-1032	C909-1034	C909-1031	0606
Hughes	2102	-	-	-
Brown Boveri Elec. (ITE)	2012	2026	2011	-
Joslyn	J151	J0101	J150	J100
Kortick	K516	K522	K513	K514
McGraw-Edison	DE4S3	DE5S1	DE2S2	DE2S1
Porcelain Prod. (Knox)	5101	5119	5107	5207
Universal	1082	-	-	-
Utilities Service	205	31221	208	207



1-3/4" Groove Diameter



3" Groove Diameter



1-3/8" Groove Diameter

cp - Deadend, Compression Type

ACSR

<u>Conductor Size</u>	<u>Alcoa</u>	<u>Anderson/Sq. D</u>
1/0	Order by	VCD-50R
2/0	Conductor	thru
3/0	Size and	VCD-61R
4/0	<u>Stranding</u>	"
266.8 kcmil 26/7	2-piece	VCD-831-1-RM
336.4 kcmil 26/7	alloy	VCD-831-1-RM
477 kcmil 26/7	compression	VCD-832-2-RM
556.5 kcmil 26/7	Type VES or	VCD-833-3-RM
795 kcmil 26/7	HES	VCD-835-4RM
954 kcmil 54/7	"	VCD-835-4RM

<u>Conductor Size</u>	<u>Burndy</u>	<u>Fargo</u>	<u>Kearney</u>	<u>Homac</u>
1/0	Type Y-W		104000	Order by
2/0	"		thru	Conductor
3/0	"		104000-03	Size and
4/0	"		"	<u>Stranding</u>
266.8 kcmil 26/7	"	Uni-Grip	104000-05	"
336.4 kcmil 26/7	Type YTW	one die	thru	"
477 kcmil 26/7	"	system	104000-14	"
556.5 kcmil 26/7	"	Order by	"	"
795 kcmil 26/7	"	conductor size		
954 kcmil 54/7	"	and stranding		

ACSR

Adjustable

Fargo  
Homac

Order by conductor size and stranding.

Aluminum Alloy  
(6201 and 5005)

Conductor Size:

4 thru 4/0

Anderson/Sq. D

Type VOD, Order by conductor size.

<u>Conductor Size:</u>	<u>2 x 3</u>	<u>Copper</u>	<u>4</u>	<u>6</u>
National Tel. Supply	71-258/3X		71-204-P	71-162-J

<u>Conductor Size:</u>	<u>6A</u>	<u>Copperweld-Copper</u>	<u>8A</u>
------------------------	-----------	--------------------------	-----------

National Tel. Supply	71-6A-P		71-8A-P
----------------------	---------	--	---------

cp - Deadend, compression type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Burndy</u>		
AWAC 4-4/3	1050	To obtain experience.
YTW7M10T	9/19/74	
AWAC 2-4/3		
YTW7M9T		
AWAC 1/0-4/3		
YTW7M7T		

cq - Deadend, Secondary  
(For use on secondary deadends only)

Copper  
Offset Compression

Conductor Size:	4	6
National Telephone Supply	91-204-P	91-162-J

Copperweld-Copper  
Offset Compression

Conductor Size:	6A	8A
National Telephone Supply	91-6A-P	91-8A-P



Copperweld-Copper  
Automatic Deadend

Conductor Size:	6A	8A
Reliable	47FD	

cr - Bracket, Angle Suspension

Applicable Specifications: "REA Specification for Angle Suspension Brackets," DT-4

<u>Manufacturer</u>	<u>Distribution</u> <u>5/8"Dia.</u>	<u>Transmission</u> <u>3/4"Dia.</u>
Chance		5728
Joslyn	J7935	J7936
Kortick	K6231	K6230
McGraw-Edison	DC8E1	DC8E2
Utilities Service	545	546

Angle Bracket, Swinging

Applicable Specification: T-8  
Drawing : TM-111A, TM-111B

Swinging angle bracket with hardware and fittings (for 230 kV transmission)

<u>Manufacturer</u>	<u>TM-111A</u>	<u>TM-111B</u>	<u>Type #1</u>	<u>Type #2</u>
American Crossarm & Conduit Company	AC8801	AC8802	X	X
Brooks	64233A	64233B	X	
Hughes	2848	2848	X	X
Joslyn	REA 64-8A	REA 64-8B	X	



cs  
July 1984

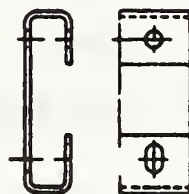
cs - Bracket, Pole Top Pin

Applicable Specifications

For Solid Steel Pins: None

For Channel Type Pins: "REA Specifications for Pole Top  
Brackets for Channel Type Pins,"  
D-14

	<u>Distribution (14.4/24.9 kV)</u>	<u>Transmission</u>
	<u>For Channel Type Pins</u>	<u>For Solid Steel Pins</u>
Chance	2157	-
Dixie	-	D2037
Joslyn	J2045	-
Kortick	K8130	K6240
McGraw-Edison	DP3A1	DP4A1
Utilities Service	36690	3794



ct - Plate, Double Arming

Transmission

<u>Manufacturer</u>	<u>4" x <math>\frac{1}{2}</math>" x 24"</u>	<u>4" x <math>\frac{1}{4}</math>" x 17"</u>
Chance	5844	5819
Dixie	D5844	D5845
Joslyn	J1600	J1607
Kortick	K1454	K1465
McGraw-Edison	DP21A1	DP23A3
Power Line Hardware	-	DAP-17
Utilities Service	4117	-

cu - Brace, crossarm, wood

Span, inches	60	60
Drop, inches	<u>18</u>	<u>30</u>
Aluma-Form	6018	6030
American Crossarm & Conduit Company	320	325
Brooks Lumber Company	44680	44681
Cascadian Company	15018	15030
Dis-Tran	DT-60	DT-601
Hatheway Patterson	16018	-
Hughes	2045-CC	2045-D
Joslyn	J4760R	J4730W-R
Utilities Structures Engineering Incorporated	CU-60-18	CU-60-30

Braces listed below have 26-inch hole spacing. They are interchangeable with the flat steel braces listed on page h.

Aluma-Form	AF626
American Crossarm & Conduit	600
Brooks Lumber Company	58128
Dis-Tran	DT-28
Hatheway Patterson	7026
Hughes	2023
Joslyn	J5526

Brace, crossarm, fiber reinforced plastic

Continental	CRB-28
Joslyn	RP-26
Plastigage	CAB-28
Shakespeare	533

cx - Splice, oval tube

Copper

<u>Conductor Size:</u>	<u>0 x 7</u>	<u>2 x 3</u>	<u>4</u>	<u>6</u>
National Tel. Supply	464	463	459	457

Copperweld-Copper

<u>Conductor Size:</u>	<u>6A</u>	<u>8A</u>
National Tel. Supply	460	459



cy-1  
July 1984

cy - Splice, Compression  
ACSR

<u>Conductor Size</u>	<u>Alcoa</u>	<u>Anderson/ Sq. D</u>	<u>Burndy</u>
4 6/1	2-piece	VC-36R	"Unisplice"
4 7/1	Order	VC-36R	(1-piece)
2 6/1	by	VC-36R	or Y-S
2 7/1	Conductor	VC-36R	(2-piece)
1/0	Size	VC-50R	Order by
2/0	and	VC-50R	Conductor
3/0	Stranding	VC-61R	Size and
4/0	"	VC-61R	Stranding
266.8 kcmil 26/7	2-piece	VC-831-1-RM	2-pc.
336.4 kcmil 26/7	Compression	VC-831-1-RM	Type YTS
477 kcmil 26/7	Alloy Type	VC-832-2-RM	"
556.5 kcmil 26/7	CJ	VC-833-3-RM	"
795 kcmil 26/7		VC-835-4RM	"
954 kcmil 54/7		VC-835-4RM	"

<u>Conductor Size</u>	<u>Fargo</u>	<u>ITT Blackburn</u>	<u>Kearney</u>
			<u>2 pc.</u>
			<u>1 pc.</u>
4 6/1		Type RC	OH4-61-71AS
4 7/1		1-piece	OH4-61-71AS
2 6/1		Order	OH2-61-71AS
2 7/1		by	OH2-61-71AS
1/0		Conductor	OH1/0-61A
2/0		Size	OHR2/0-61A
3/0		and	OHR3/0-61A
4/0		Stranding	HR4/0-61A
266.8 kcmil 26/7	Uni-Grip	#4 to 4/0	HR-266-267A
336.4 kcmil 26/7	one die		HR-336-267A
477 kcmil 26/7	system		HR-477-267A
556.5 kcmil 26/7	Order by		HR-556-267A
795 kcmil 26/7	conductor size		
954 kcmil 54/7	and stranding		

<u>Conductor Size</u>	<u>Nat. Tel. Supply</u>	<u>Homac</u>	<u>ESP</u>
4 6/1	"Nicopress"	"Tension	FTR-4
4 7/1	(1-pc. or 2-pc.)	splicer"	FTR-4
2 6/1	Order by Conduc-	(1-piece or	FTR-2
2 7/1	tor Size and	2-piece	FTR-2.5
1/0	Stranding	Order by	FTR-1/0
2/0	2-pc.	Conductor	FTR-2/0.5
3/0	"	Size and	FTR-3/0
4/0	"	Stranding	FTR-4/0
266.8 kcmil 26/7	"	2-pc.	
336.4 kcmil 26/7	"	"	
477 kcmil 26/7	"	"	
556.5 kcmil 26/7	"	"	
795 kcmil 26/7			
954 kcmil 54/7			

cy - Splice, Compression

Copper and Copperweld-Copper

<u>Conductor Size</u>	<u>Anderson/ Sq. D</u>	<u>Burndy</u>	<u>Kearney</u>	<u>Nat. Tel. Supply</u>
6 cu	VCC-28	YDS6W	OH6C	1-162/J
4 cu	VCC-28	YDS4W	OH4C	1-204/P
2 x 3 cu	-	YDS2C-3	OH2-3CX	1-258/3X
0 x 7 cu	-	YDS25	OH1-7C	1-325/7F6
8A CWC	VCC-28	YDS8KT	OHR8ACW	1-8A-P
6A CWC	VCC-28	YDS6KT	OHR6ACW	1-6A-P
4A CWC	VCC-37	YDS4KT	OHR4ACW	1-4A-X
2A CWC	VCC-43	-	-	-

<u>Conductor Size</u>	<u>Homac</u>
6 cu	J2C3
4 cu	L2C5
2 x 3 cu	S2C7
0 x 7 cu	U2C9
8A CWC	L2E1
6A CWC	L2E3
4A CWC	Q2E5
2A CWC	U2E7

cy - Splice, compression  
(one-piece)

(For 6201 and 5005 Aluminum Alloy Conductors)

<u>Conductor Size</u>	<u>Anderson/ Square D</u>	<u>Burndy</u>	<u>ITT Blackburn</u>
#4 thru 4/0	Type VC-R Order by Conductor Size and Stranding	"Unisplice" Order by Conductor Size and Stranding	Type RC Order by Conductor Size and Stranding

<u>Conductor Size</u>	<u>Homac</u>	<u>ESP</u>
#4 thru 4/0	"Tension Splicer" Order by Conductor Size and Stranding	Type FTR order by size and stranding



cy - Splice, compression

1-piece splice for ACSR

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
*ALCOA "Jiffy Joint"	704 11/10/60	To obtain experience.

1-piece splice for AWAC

Burndy AWAC 4-4/3 YDS7M10T AWAC 2-4/3 YDS7M9T AWAC 1/0-4/3 YDS7M7T	1050 9/19/74	To obtain experience.
--	-----------------	-----------------------

\*Satisfactory for use with 6201 and 5005 all aluminum alloy conductor through 4/0 and 19 strand conductors of sizes 26,800 CM and 477,000 CM.

cz - Splice for Steel Strand (Overhead Ground Wire)

Compressions

Single Sleeve Only

	<u>High Strength Steel</u> <u>3/8" 7/16"</u>	<u>Extra High Strength</u> <u>3/8" 5/16" 7/16"</u>	<u>Aluminum Clad Steel</u>		
			<u>7 No. 9 AWG</u>	<u>7 No. 8 AWG</u>	<u>7 No. 7 AWG</u>

4914.386 4916.453

Aloca					
Burndy	YTS375E	YTS438E	YDS7M9T	YDS7M8T	YDS7M7T
Fargo	81390	81468	81375	81421	81468
Homac	29714				
Kearney	HR-3/8-3-7S				
National Tel. Supply	5-7/120G92	5-7/145J22			

Steel and Aluminum Sleeves

Automatic

Homac	29714 & 28414 (Two piece)				
Reliable	5043	5003	5042	5041	5043
Electroline	GD-537				

Bolted Type

Formed Type

Helical Line Products	HS-310-3/8"	HS-311-7/16"
-----------------------	-------------	--------------

da  
July 1984

da - Bracket, insulated

	<u>Bracket without Insulator</u>	<u>Bracket with 1-3/4" Spool Insulator</u>	<u>Bracket with 3" Spool Insulator</u>
Chance	0327	0327-C909-1032	0327-C909-1034
Dixie	D0327	-	-
Joslyn	J1300	J1301	J1303
Kortick	K9278	K9081	K9082
McGraw-Edison	DC2C1	-	-
Hughes	1077LI	1077SI	1077I

dd  
July 1984

dd - Adapter, Insulator

(for adapting machine bolt to pin insulator thread)

Bolt Size, Inches	5/8	5/8
Insulator Thread Dia., Inches	<u>1</u>	<u>1-3/8</u>
<u>Manufacturer</u>		
Chance	4258	--
Joslyn	J2840	J2841
McGraw-Edison	DP1A1	DP1A2

dh - Ground, pole

(For system grounds see ground rods on page ai.)

Manufacturer

Catalog Number

Galvanized Steel Plate With Insulated  
Copper Lead

(For connecting to a copper or aluminum  
ground wire above ground.)

Blackburn	GP-2
Joslyn	J055W
Power Line Hardware	PGPS-56CL8
Weaver	GSP-1

Galvanized Steel Plate With Connector

(For connecting to a galvanized iron  
ground wire.)

Blackburn	GP-2C
Joslyn	J055
McGraw-Edison	DN13M1
Power Line Hardware	PGPS-56C
Weaver	GSP-2

Copper Plate

Blackburn	GP-100
Drabco	D 101
Homac	5575
Power Line Hardware	PGPC-56
Weaver	PBH

dl  
July 1984

dl - Pipe Spacer

3/4" diameter x 1 1/2" length

<u>Manufacturer</u>	<u>Catalog Number</u>
Chance	2237
Dixie	D2031
Joslyn	J2031
McGraw-Edison	DM3P2
Utilities Service	36695

dm - Bracket, transformer

(For cluster mounting of two or three transformers on pole)

<u>Manufacturer</u>	<u>Transformer Size, kVA</u>	<u>Band Type</u>	<u>Through Bolt Type</u>
Aluma-Form	3-50	6M3-6	3MW-24
	75-100	15M3-6	12MW-24
Chance	3-25	215, 315	
	3-50		C212-0142
	37½-50	250, 350	
	75-100	3100	C212-0146
Dixie	3-25*		D-0565
	37½-50		
	75-100		D-0561-CP
Hughes	3-25*		3021
	37½-50		3020
	75-100		3020 with adapter plates and back plate
Joslyn	3-25*	24352, 24353 with adapter plate	
		24524	J6865
	37½-50	24352, 24353 (two needed)	J6864
	75-100	24352, 24353 (two needed)	J6866
McGraw-Edison	3-25*	DT6C2	DT6C1
	37½-50	DT7C2	DT7C1
	75-100	DT8C2	DT8C1
Turner	3-25*		305-25
	37½-50		305-100
	75-100		305-100

\*These brackets will accommodate 25 kVA transformers which are made with a 12-inch spacing between support lugs. Those 25 kVA transformers having a 23½-inch spacing between lugs will require the bracket listed for 37½-50 kVA.

For mounting of two transformers

Aluma-Form	3-100	DM-4M2
	3-50	DM-2M2
Chance	3-100	C212-0001
Hughes	3-50	3022
McGraw-Edison	3-50	DT16C1
Turner	3-50	205-25



dp  
July 1984

dp - Clamp, ground wire

Transmission

For grounding steel towers and substation structures

Bolt Included

(For use with copper ground wires)

<u>Manufacturer</u>	<u>Catalog Number</u>
Penn-Union	GH-30-C-A1
Royal Electric	12202-T (Type LCS)
UTM	910-027-01

For use in: Pole Grounding Assembly TM-9  
Capacitor Assemblies M9-11, M9-12 and M9-13

<u>Manufacturer</u>	<u>For 5/8" Bolt</u>	<u>For 3/4" Bolt</u>
Continental	SBL-33	-
Dixie	D-5452	-
Flagg (MIF)	PA-166A	-
Joslyn	J1163	J1164
McGraw-Edison	DG1C5	DG1C6

dq  
July 1984

dq - Eye Screw, Elliptical

For use in deadending triplex type service cable, Drawing KLOC

Manufacturer

Catalog No.

Joslyn

J8930

McGraw-Edison

DF7E6

dr  
July 1984

dr - Clevis, conduit, insulated

For use in deadending triplex type service cable, Drawing K16C.

Application Specifications: "REA Specifications for Insulated  
Conduit Clevises and Conduit Wire-  
holders for Pipe Mast Deadends," D-16

Joslyn

J0311\*

McGraw-Edison

DW8M1\*

\*Insulator not included. See page cm for spool insulator.

ds  
July 1984

ds - Wireholder, conduit

For use in deadending open wire services on pipe masts, Drawing K17.

Applicable Specifications: "REA Specifications for Insulated Conduit  
Clevises and Conduit Wireholders," D-16

<u>Manufacturer</u>	<u>Catalog Number</u>
Chance	C207-0075
Dixie	D-4010
Joslyn	J0588
McGraw-Edison	DW2C3
Porcelain Products	2061-C

dt  
July 1984

dt - Deadend, service

For deadending triplex type service cable, Drawing K10C.

<u>Manufacturer</u>	<u>ACSR Size</u>	<u>Wedge Type</u>	<u>Catalog No.</u> <u>Formed Type</u>
Blackburn	4	W6-4AA	-
	2	W6-2AA	-
	1/0	W2-0AA	-
Burndy	4	CW2R-1	-
Chance	4	-	CSG-030
	2	-	CSG-050
	1/0	-	CSG-070
Helical Line Products	4	-	HSG-514
	2	-	HSG-518
	1/0	-	HSG-522
Joslyn	4 & 2	R7295	-
	1/0	R7287	-
Penn-Union	4 & 2	WDC-2S	-
	1/0	WDC-10S	-
Preformed Line Products	4	-	SG-4502
	2	-	SG-4504
	1/0	-	SG-4506
Reliable	4 & 2	7295	-
	1/0	7287	-

du - Link, Extension

DISTRIBUTION

<u>Manufacturer</u>	<u>Catalog Number</u>
Bethea Hardware	LCE-14
Chance	C207-0112
Continental	CEL-14
Flagg (MIF)	PA319
McGraw-Edison	DC33B6
Utilities Service	495

Guy Extension Link  
(For "H" Structure)

<u>Manufacturer</u>	<u>One Guy Attachment</u>	<u>Two Guy Attachment</u>
Joslyn	J22421	J22523

NOTE: The distribution extension links may be substituted for anchor shackle (Item bo), eye bolt (Item o) and eye nut (Item aa) for both small and large conductor drawings shown in REA Form 803 and REA Bulletin 50-3 at the option of the owner.

Conditional List  
du(1)  
July 1984

du - Connecting Links

Strength Rating: 25,000 lbs. ultimate loading

<u>Manufacturer</u>	<u>Link to guy</u>	<u>Size</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Hughes	3154	3/8" x 2" x 9-1/2"	1172	To obtain
	Link to		9/20/79	experience
	<u>Insulators</u>			in conjunction
Hughes	3176	3/8" x 3" x 9-1/2"	1172	with pole bands
			9/20/79	(Item fv(1))



dy - Bolt, eye, double arming

Applicable Specification: ANSI C135.4, "Standards for  
Galvanized Ferrous Eye Bolts  
and Nuts for Overhead Line  
Construction."

Applicable Sizes : 5/8 inch, 14 through 26 inch length  
3/4 inch, 14 through 26 inch length

The following manufacturers have shown compliance with the applicable  
specifications:

A. B. Chance Company  
Dixie Electrical Manufacturing Company  
Joslyn Mfg. and Supply Company  
Kortick Manufacturing Company  
\*McGraw-Edison  
Utilities Service Company

\*"Static proof" designs available.



dz  
July 1984

dz - Clip, Guy Wire

<u>Manufacturer</u>	<u>5/16"</u>	<u>3/8"</u>	<u>7/16"</u>	<u>1/2"</u>
Chance	6453	6454	6455	6456
McGraw-Edison	DJ17C6	DJ17C8	DJ17C10	DJ17C12
Utilities Service	4953	4954	4955	4956

ea - Insulator and Stud, post type

DISTRIBUTION

System voltage, kV	7.2/12.5*	7.2/12.5*	14.4/24.9
Leakage, inches	7-1/2	10	15
Flashover, dry, kV	65	70	95
Flashover, wet, kV	<u>40</u>	<u>50</u>	<u>65</u>

Chance

(Malleable iron base, also  
available with aluminum  
base)

7" Stud	C903-1710-04	C903-1711-04	C903-1712-04
1-3/4" Stud	C903-1710-05	C903-1711-05	C903-1712-05

Lapp

7" Stud	4415P	4420P	4427P
1-3/4" Stud	4315P	4320P	4327P

Ohio Brass

7" Stud		43400-7040	43401-7040
1-3/4" Stud		43400-7010	43401-7010

TRANSMISSION

System voltage, kV	22	34.5	46
ANSI Class	57-2	57-3	57-4
Flashover, dry, kV	110	125	150
Flashover, wet, kV	<u>85</u>	<u>100</u>	<u>125</u>

Chance

7" Stud	C903-1002-04	C903-1003-04	
1-3/4" Stud	C903-1002-05	C903-1003-05	

Lapp

7" Stud	9435	9445	9455
1-3/4" Stud	9335	9345	9355

Ohio Brass

7" Stud	37620-7040	41640-7040	41650-7040
1-3/4" Stud	37620-7010	41640-7010	41650-7010

NOTE: Post Insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

\*The transverse loading on these insulators shall not exceed the lower of 40 percent of the insulator's ultimate strength and the maximum transverse loading given for the structure in REA Bulletin 50-3.

ea - Insulators, horizontal post type

<u>Manufacturer</u>	<u>34.5 kV</u>	<u>69 kV</u>	<u>115 kV</u>
Brown Boveri Electric (ITE)	62356	-	-
Lapp	F-4745	F-4788	F-70147
Ohio Brass	43740	43790	47043

ea - Insulator, post type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Brown Boveri Elec.(ITE)		
2220 (7.2/12.5 kV)	932	To obtain experience
2227 (14.4/24.9 kV)	12/4/69	
62055 (22 kV)	1189	
62056 (34.5 kV)	6/19/80	

eb  
July 1984

eb - Bracket, Pole Top  
For Post Type Insulators

DISTRIBUTION

<u>Barron Bethea</u> (7.2 or 14.4 kV)	1B-4
<u>Bethea Hardware</u> (7.2 or 14.4 kV)	BPT-58F
<u>Continental</u> (7.2 or 14.4 kV)	PTB-55-8
<u>Flagg (MIF)</u> (7.2 or 14.4 kV)	P526
<u>Joslyn</u> (7.2 or 14.4 kV)	J23333
<u>Lapp (Line Ware)</u> (7.2 or 14.4 kV)	304043
<u>McGraw-Edison</u> (7.2 or 14.4 kV)	DC62B1
<u>Ohio Brass</u> (7.2 or 14.4 kV) (7.2 kV)	84324 89725
<u>Universal Electric</u> (7.2 or 14.4 kV)	PT-8R

TRANSMISSION

Barron Bethea	1B-4
Bethea Hardware	BPT-58HF
Continental	PTB-66H
Flagg (MIF)	P532
Lapp (Line Ware)	304044
McGraw-Edison	DP29A1
Ohio Brass	84324

NOTE: Pole top bracket (Item eb) and post insulator (Item ea) may be substituted for pole top pin (Item b) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Form 803 at the option of the owner.

ec  
July 1984

ec - Bracket, Offset Neutral

Chance C206-0004

Dixie D-2353

Joslyn J2352

McGraw-Edison DC6N1



ed  
July 1984

ed - Support, overhead ground wire

Applicable Specifications: "REA Specifications for Overhead Ground  
Wire Support Brackets," T-2

Pole top diameter, inches	6-8	8-10	10-12
Chance	-	5432	5433
Dixie	-	-	D7760
Hughes Brothers	-	2859-12	2859-14
Joslyn	J6393	J6394	J6395
Kortick	K3580	K3581	K3582
McGraw-Edison	DN9M1	DN9M2	DN9M3
Utilities Service	C1238	C1239	C1240

ef - Bolt, clevis

Applicable Specifications: "REA Specifications for Clevis Bolts,"  
DT-7

	<u>Dia.</u> <u>Inches</u>	<u>8"</u>	<u>10"</u>	<u>12"</u>	<u>14"</u>
Chance	5/8	15808	15810	15812	15814
	3/4	15828	15830	15832	15834
Joslyn	5/8	J7808	J7810	J7812	J7814
	3/4	J7828	J7830	J7832	J7834



eg  
July 1984

eg - Plate, crossarm reinforcing

TRANSMISSION

For 5-5/8" x 7-3/8" crossarm

<u>Manufacturer</u>	<u>Catalog No.</u>
Chance	4047
Hughes	1113.88
Joslyn	J22672.6
McGraw-Edison	DG16M9
Utilities Services	3838

eh - Hook, ball

<u>Manufacturer</u>	<u>Catalog No.</u>
Anderson Elec./Square D	HB-30
Bethea Hardware	BH-5
Continental Electric Company	BH-30-5
Brown Boveri Electric (ITE)	3001
Joslyn (Brewer-Titchener)	3001-HT
Knox	3001
Lapp	7055
Lindsey	3310
Ohio Brass	78420
Power Line Hardware	BH-30

ei - Clamps, suspension with socket eye

ACSR with Straight or Formed Armor Rods

	AWC		kcmil	
	1/0 & 2/0	3/0	4/0	556.5
Iron or Steel Clamps				
Anderson	MS-82-S	--	MS-104-S	--
Barron Bethea	FGW-4S	--	--	--
Bethea Hardware	FS-83-S	--	--	--
Brown Boveri Electric (ITE)	6203	6204	6204	6257
Joslyn	6203	6204	6204	6257
(Brewer-Titchener)				
Knox	6203A-U	6204A-U	6204A-U	6257A-U
Lapp	305743S	--	--	--
Ohio Brass	83085	83105	83115	83145

ACSR with Straight or Formed Armor Rods

	AWC		kcmil	
	1/0 & 2/0	3/0 & 4/0	266.8	336.4
Aluminum Alloy Clamp				
Anderson	HAS-85-S	HAS-104-S	HAS-118-S	HAS-139-S
Bethea Hardware	LS-1-S	LS-2-S	LS-3-S	LS-4-S
C & R	CRSC-1S	CRSC-2S	CRSC-3S	CRSC-3S
Dulmison	--	AGS	AGS	AGS
Brown Boveri Electric (ITE)	9503-U	9504-U	9505-U	9506-U
Continental	SC-85-S	SC-105-S	SC-119-S	SC-136-S
Joslyn (Brewer-Titchener)	9503-S	9504-S	9505-S	9506-S
Knox	9503-U	9504-U	9505-U	9506-U
Lapp	306029S	306030S	306031S	306032S
Ohio Brass	87085	87105	87115	87135
*Preformed	--	AGS	AGS	AGS

\*Cleviss type available.

ej - Clamps, deadend with socket eye

ACSR

AWG	kcmil			
2/0 to 4/0	266.8	366.4	477	556.5
				795
				954

Iron or Steel Clamps (require armor tape or liner)

Brown Boveri Electric (ITE)	5001	5002	5002	5003	--	--	--
Joslyn (Brewer-Titchener)	5001	5002	5002	5003	--	--	--
Knox	5001	5002-B	5002-B	5003	--	--	--
Ohio Brass	80440	80445	80445	80450	--	--	--

Aluminum Alloy Clamps (do not require armor tape or liner)

Anderson/Square D	SD-57-S	SD-70-S	SD-86-S	SD-86-S	SD-98S	--	--
Bethea Hardware	ADE-21-S	ADE-22-S	ADE-23-S	ADE-24-S	ADE-24-S	ADE-2526-S	ADE-2526-S
C & R	CR-10-60S	CR-20-60S	CR-20-60S	--	--	--	--
Brown Boveri Electric (ITE)	52001	52011	52021	52031	--	--	--
Joslyn (Brewer-Titchener)	5200	5201	5202	5203	--	--	--
Knox	5200	5201	5202	5203	--	--	--
Lapp	305757S	305758S	305759S	305760S	--	--	--
Ohio Brass	86536	86540	86546	86546	--	--	--

NOTE: When used with clevis-type insulators for large conductors on distribution lines, order clamp with clevis eye.

ek  
July 1984

For Bolt Diam., in.:	ek - Locknuts				
	3/8	1/2	5/8	3/4	7/8
	<u>MF Type</u>				
Chance	3510	3511	3512	3513	3514
Dixie	D3510	D3511	D3512	D3513	--
Hughes	MF30	MF50	MF60	MF70	--
Joslyn	J8581	J8582	J8583	J8584	J8584-1/2
Kortick	K1065	K1066	K1067	K1068	--
McGraw-Edison	DF 3N1	DF 3N2	DF 3N4	DF 3N6	DF 3N8
Power Line Hardware	SLN38	SLN50	SLN58	SLN34	SLN78
Utilities Service	4920	4921	4922	4923	4924



el  
July 1984

el - Sectionalizer

Manufacturer

Mc Graw-Edison (Kyle)

Type

GH (with crossarm mounting  
bracket KA27G)

el - Sectionalizer

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw Edison</u>		
Sectionalizer, three phase Type GN3	663 3/12/59	To obtain experience.
Sectionalizer with 125 kV BIL accessory Type GH, 15 kV single phase	1046 7/25/74	1. To obtain experience.  2. For use on single-phase taps of 14.4/24.9 kV multi- grounded wye systems.
*Sectionalizer, three phase Type GN3E 14.4 kV, 200 amp max.	1153 12/21/78	To obtain experience.
*Sectionalizer, three phase Types GV and GVC 14.4 kV, 400 amp max.	1153 12/21/78	To obtain experience.
*Sectionalizer, three phase Types GW and GWC 34.5 kV, 400 amp max.	1153 12/21/78	To obtain experience.
<u>General Electric</u>		
Sectionalizer, single-phase dry-type - 15 kV Model 9F41D with load interrupter only	910 1/23/69 1159 3/15/79 1278 4/12/84	1. To obtain experience.  2. Accepted ratings; 10 through 100 amperes at 15 kV max. line to ground voltage.
<u>Joslyn</u>		
Sectionalizer, three-phase, 15 kV, 400 and 600 amperes Model VBM with VT or RS control	1042 5/30/74	To obtain experience.
*NOTE: Ratings greater than 100 ampere for 7.2/12.5 kV application and greater than 200 ampere for 14.4/24.9 kV application are acceptable only with ground trip device.		

em - Brace, crossarm, special  
(angle alley arm)

DISTRIBUTION

15 " span, 14 " drop; 1-1/2 " x 3/16 "

Dixie	D17 93 9
Joslyn	J14 15
Kortick	K1978
McGraw-Edison	DB4L1
Utilities Service	55 14

TRANSMISSION

	<u>2'-6" span x 1'-8" drop</u> <u>1-3/4" x 3/16"</u>	<u>3'-6" span x 2'-3" drop</u> <u>1-3/4" x 3/16"</u>
Chance	--	6999
Hughes	AS-2309-B	AS-2309-A
Joslyn	J14 30	J1442
Kortick	K1975	K1976
McGraw-Edison	DB4L 3	DB4L 4
Utilities Service	5509	55 10

Conditional List  
eq(1)  
July 1984

eq - Narrow Profile Brackets and Special Arm Assemblies  
(see REA Bulletin 61-12)

METAL BRACKETS

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Flagg (MIF)</u>		
Single post insulator bracket, P542	1032 12/20/73	1. To obtain experience.
Deadend bracket assembly, PAX188A		2. For use only in scenic areas and locations where right-of-way is limited.
Deadend bracket assembly, PAX188M for 14.4/24.9 kV construction	1044 6/27/74	
Standoff bracket, PA619H	1048 8/22/74	3. Not to be used where conductor galloping may be expected.
<u>Joslyn</u>		
Single post insulator brackets 24840.1, for 7.2/12.5 kV construction only 24840.2, for 14.4/24.9 kV construction	1043 6/13/74	(same as above)
<u>Chance</u>		
Single post insulator brackets C206-0209 for 7.2/12.5 kV construction only C206-0010 for 14.4/24.9 kV construction	1049 9/5/74	(same as above)
Deadend bracket assembly, C206-0179	1081	
Deadend bracket assembly, C206-0211 for 14.4/24.9 kV construction	1/8/76	
<u>Royston</u>		
Two post insulator bracket RMC-001 for 7.2/12.5 or 14.4/24.9 kV construction	1053 11/14/74	(same as above)
<u>Continental</u>		
Standoff bracket IACB-18-5	1065 5/15/75	(same as above)

eq - Narrow Profile Brackets and Special Arm Assemblies  
(See REA Bulletin 61-12)

METAL BRACKETS

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Anderson/Sq. D Standoff bracket, COB-E-180-TGL	1180 1/31/80	1. To obtain experience.  2. For use only in scenic areas and locations where right-of-way is limited.  3. Not to be used where conductor galloping may be expected.
Bethea Hardware Single post insulator bracket, HBF-10-9-GC Standoff bracket VIB3-18-GC	1156 2/1/79 1213 6/4/81 1278 4/12/84	Same as above.
Dixie Deadend bracket assembly D21142 for 12.5/7.2 kV	1220 10/8/81	Same as above.
Deadend bracket assembly D21144 for 24.9/14.4 kV		
Universal Electric Single post insulator bracket, SAB-3-18-GC	1271 12/15/83	Same as above.
Western Power Products Single post insulator bracket, HDB-200-R, for 7.2/12.5 kV construction only	1152 12/7/78	Same as above.

Conditional List  
eq(2)  
July 1984

eq - Narrow Profile Brackets and Special Arm Assemblies  
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 12.5/7.2 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Shakespeare</u>		
Two-phase angle bracket 761-36-8	1032 12/20/73	1. To obtain experience.
Two-phase pin bracket 813-36		2. For use only in scenic areas and locations where right-of-way is limited.
Standoff insulator, 560-13		
Standoff insulator, 560-18		
Suspension bracket, 615-18		
Deadend arm, 540-36	1063(4/17/75)	3. Not to be used where conductor galloping may be expected.
Standoff bracket, 892-18	1089(4/29/76)	
		4. Not to be used in con- taminated atmospheres.
<u>Chance</u>		
Two-phase pin bracket C653-0638	1043 6/13/74	Same as above.
Standoff insulator C653-0621		
Deadend arm C653-1023	1049(9/5/74) 1141(6/15/78)	
<u>Continental</u>		
Two-phase pin bracket GPB2-568M-36V	1181 2/14/80	Same as above.
Two-phase angle bracket GPB2-568M-36E		
Standoff insulator GPB-58M-13		
Standoff insulator GPB-58M-18		
Deadend arm GDEA-58-3.0-36-2E		
Suspension bracket GPB-58M-18E		

eq - Narrow Profile Brackets and Special Arm Assemblies  
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 12.5/7.2 KV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Flagg (MIF)</u>		
Two phase angle bracket 7561-336E	1201 12/4/80	1. To obtain experience.
Two phase pin bracket 7561-436		2. For use only in scenic areas and locations where right-of-way is limited.
Standoff insulator 7561-012		
Standoff insulator 7561-018		3. Not to be used where conductor galloping may be expected.
Suspension bracket 7561-818		
Standoff bracket 7561-218		4. Not to be used in con- taminated atmospheres.
Deadend arm 7554-636-4E	1272 1/5/84	



eq - Narrow Profile Brackets and Special Arm Assemblies  
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 24.9/14.4 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Chance</u>		
Two-phase pin bracket C653-0987	1049 9/5/74	1. To obtain experience.
Standoff insulator C653-0988		2. For use only in scenic areas and locations where right-of-way is limited.
Deadend arm C653-1024	1141 6/15/78	3. Not to be used where conductor galloping may be expected.
		4. Not to be used in con- taminated atmospheres.
<u>Continental</u>		
Two-phase pin bracket GPB 2-568M-44--V-1.375	1181 2/14/80	Same as above.
Two-phase pin bracket GPB 2-558H-48-V-1.375	1272	
Standoff insulator GPB-58M-19-V-1.375	1/5/84	
Standoff insulator GPB-58H-20-V-1.375		
Standoff bracket GIACB-58M-18		
Deadend arm GDEA-58-3.0-48-2E		
<u>Shakespeare</u>		
Deadend arm, 540-48	1063(4/17/75)	Same as above.
Standoff insulator, 880-20	1081	
Two-phase pin bracket, 883-48	1/8/76	
Standoff insulator, 870-19	1089	
Two-phase pin bracket, 862-44	4/29/76	
Standoff bracket, 892-18		

eq - Narrow Profile Brackets and Special Arm Assemblies  
(See REA Bulletin 61-12)

FIBERGLASS REINFORCED PLASTIC

For 24 .9 /14 .4 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Flagg (MIF)</u>		
Standoff insulator 7581-120X	1201 12/4/80	1. To obtain experience.
Standoff insulator 7561-118X	1272	2. For use only in scenic areas and locations where right-of-way is limited.
Two-phase pin bracket 7561-448X	1/5/84	
Standoff bracket 7561-218		3. Not to be used where conductor galloping may be expected.
Deadend arm 7554-648-4E		4. Not to be used in con- taminated atmospheres.

eq - Narrow Profile Brackets and Special Arm Assemblies  
(See REA Bulletin 61-12)

WOOD ARM ASSEMBLIES

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Aluma-Form</u>		
Arm assembly, 7.2/12.5 kV XA-3812	1038 4/4/74	1. To obtain experience.
Arm assembly, 14.4/24.9 kV XA-4214		2. For use only in scenic areas and locations where right-of-way is limited.
		3. Not to be used where conductor galloping may be expected.
		4. Not to be used as deadend structures.
<u>Hughes Brothers</u>		
Deadend arm, 2890-J complete with braces and attaching hardware, fittings and bolts	1065 5/15/75	1. To obtain experience.
		2. For use only in scenic areas and locations where right-of-way is limited.
		3. Not to be used where conductor galloping may be expected.

er - Wire Guard, Plastic

See Drawing M-24

Manufacturer

Type or  
Catalog No.

Chance

PTG

Fargo

GM-936

Preformed Line Products (Tree Guard)

PTG

es  
July 1984

es - Splice Cover, Plastic

(For use over compression type service connections  
in place of tape.)

<u>Manufacturer</u>	<u>Type</u>
Anderson/Square D	Type SEC
ITT Blackburn	Type C
Kearney	Type 601
3M	PST Series 8400
Plastic Engineering & Sales Co.	Wire Splice Cover
Virginia Plastics	Type VP

Splice Cover and Moisture Seal for  
Secondary Cable Connections (See  
Drawings G312 and UM5)

<u>Manufacturer</u>	<u>Type</u>
AMP	Sealing and Dielectric Compound
Bishop	Electro-Seal
3M	Scotch Brand #2200

Bolted Connector Cover

(For use over bolted type service connections in place of tape.)

<u>Manufacturer</u>	<u>Type</u>
Fargo	GA-9000 B Series

eu - Extension Link  
(Fiberglass)  
(Distribution)

<u>Manufacturer</u>	<u>Strength</u>	<u>Catalog No.</u>
Anderson/Square D	10,000 lbs.	*GSB1-9
	15,000 lbs.	GSB2-12
Barron Bethea	11,000 lbs.	*BB-11-EE-12
	15,000 lbs.	BB-15-EE-12
Continental	11,000 lbs.	*GEE11-12
	15,000 lbs.	GEE15-12
Flagg (MIF)	11,000 lbs.	150-12EE
	15,000 lbs.	150-12EE
Joslyn-Empire	15,000 lbs.	500-12EE
Plastigage	11,000 lbs.	*HSB-1-12
	15,000 lbs.	HSB-2X-12

\*For use with 6" suspension insulators.

Conditional List  
ex  
July 1984

ex - Splice, formed type

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Preformed Line Products</u>		
Splice for ACSR	654	To obtain experience.
FTS full tension splice	10/16/58	For repair only.
Splice for AWAC	999	To obtain experience.
LS-0185 for 4-4/3	8/31/72	For repair only where
LS-0188 for 2-4/3		alumoweld strands are
LS-0191 for 1/0-4/3		not broken.



fc - Capacitors, Shunt  
12470/7200 Volts

<u>Manufacturer</u>	<u>Size</u>	<u>1 Bushing</u>	<u>2 Bushing</u>	<u>3 Bushing</u>
General Electric Film/Foil Type	25 kvar	52L226RC	52L206RC	
	50 kvar	51L226RC	51L206RC	
	100 kvar	54L226RC	54L206RC	
	150 kvar	54L526RC	54L506RC	
	200 kvar	58L126RC	58L106RC	
	300 kvar	59L226RC	59L206RC	59L611RC
Sangamo	50 kvar	346356	346306	
	100 kvar	346006	346036	
	150 kvar	346106	346136	
	200 kvar	346656	346606	
	300 kvar			347118
	400 kvar			348218
Westinghouse	50 kvar	1N02050A09	1N02050A10	
	100 kvar	1N02100A09	1N02100A10	
	150 kvar	1N02150A09	1N02150A10	1N02150A07
	200 kvar	1N02200A09	1N02200A10	
	300 kvar			1N02303A07
	400 kvar			1N02403A07

fc-2  
July 1984

fc - Capacitors, Shunt  
24900/14400 Volts

<u>Manufacturer</u>	<u>Size</u>	<u>1 Bushing</u>	<u>2 Bushing</u>	<u>3 Bushing</u>
<u>General Electric</u> Film/Foil Type	50 kvar	51L252RC		
	100 kvar	54L252RC		
	150 kvar	54L552RC		
	200 kvar	58L154RC		
Sangamo	50 kvar	346365	346318	
	100 kvar	346016	346052	
	150 kvar	346115	346150	
	200 kvar	346676	346615	
Westinghouse	50 kvar	1N02050A31		
	100 kvar	1N02100A31		
	150 kvar	1N02150A31		
	200 kvar	1N02200A31		
	300 kvar			1N02303A29
	400 kvar			1N02403A29

fc - Capacitors, shunt  
12470/7200 volts

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u>		
All film type, 1 bushing	1109	To obtain experience
CEP131B6 (100 kvar)	3/3/77	
CEP132B6 (150 kvar)		
CEP140B6 (200 kvar)		
CEP160B6 (300 kvar)	1186 (5/8/80)	Same as above
All film type, 2 bushing		
CEP131A6 (100 kvar)		
CEP132A6 (150 kvar)		
CEP140A6 (200 kvar)		
CEP160A6 (300 kvar)	1186 (5/8/80)	Same as above
<u>Sangamo</u>		
All-film type, 1 bushing	1200	To obtain experience
356356 ( 50 kvar)	11/20/80	
356006 (100 kvar)		
356106 (150 kvar)		
356656 (200 kvar)		
All-film type, 2 bushing		
356306 ( 50 kvar)		
356036 (100 kvar)		
356136 (150 kvar)		
356606 (200 kvar)		
<u>Westinghouse</u>		
	1211	Same as above
All-film type, 1 bushing	4/30/81	
1N03050A09 ( 50 kvar)		
1N03100A09 (100 kvar)		
1N03150A09 (150 kvar)		
1N03200A09 (200 kvar)		
All-film type, 2 bushing		
1N03050A10 ( 50 kvar)		
1N03100A10 (100 kvar)		
1N03150A10 (150 kvar)		
1N03200A10 (200 kvar)		
All-film type, 3 bushing		
1N03303A07 (300 kvar)		
1N03403A07 (400 kvar)		

Conditional List  
fc(2)  
July 1984

fc - Capacitors, shunt  
24900/14400 volts

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u>		
All film type, 1 bushing	1109	To obtain experience
CEP138B4 (100 kvar)	3/3/77	
CEP137B4 (150 kvar)		
CEP142B4 (200 kvar)		
CEP162B4 (300 kvar)	1186 (5/8/80)	Same as above
<u>Sangamo</u>		
All-film type, 1 bushing	1200	Same as above
356365 ( 50 kvar)	11/20/80	
356016 (100 kvar)		
356115 (150 kvar)		
356676 (200 kvar)		
All-film type, 2 bushing		
356318 ( 50 kvar)		
356048 (100 kvar)		
356148 (150 kvar)		
356618 (200 kvar)		
<u>Westinghouse</u>		
All-film type, 1 bushing	1211	Same as above
1N03050A31 ( 50 kvar)	4/30/81	
1N03100A31 (100 kvar)		
1N03150A31 (150 kvar)		
1N03200A31 (200 kvar)		
All-film type, 3 bushing		
1N03303A29 (300 kvar)		
1N03403A29 (400 kvar)		
<u>General Electric</u>		
Film/Foil Type, 1 bushing	1192	Same as above
51L252RC (50 kvar)	8/7/80	
54L252RC (100 kvar)		
54L552RC (150 kvar)		
58L154RC (200 kvar)		

fd - Hangers, capacitor

Crossarm Mounting

	<u>1 unit</u>	<u>2 units</u>	<u>3 or 4 units</u>
General Electric	39F41	39F53	39F54
McGraw-Edison	CH1A1	CH2A2	CH4A1
Sangamo	94346	94345	94347
Westinghouse	85B397G01	7910644G01	7910644G02

Pole Mounting

	<u>Single Phase</u>	<u>Three Phase</u>	
		<u>In Line</u>	<u>Cluster</u>
Aluma-Form	CR-3* thru CR-6*	CR-3/4*	3-CR-3/4*
Joslyn	J6744, J6744A		
General Electric	39F83G1	39F86G1	
Sangamo	97650		
Westinghouse	AL30R (3 units)	(1Ø units)	
	AL60R (6 units)	AL30R (3 units)	
		AL60R (6 units)	
		AL90R (9 units)	
		(3Ø units)	
		AL13W (1 unit)	
		AL23W (2 units)	
		AL33W (3 units)	
		AL43W (4 units)	
		AL53W (5 units)	

\* Available with oil switch mounting bracket.

fg  
July 1984

fg - Crossarm Saddle

(3-3/4" x 4" with 1-1/4" x 1/4" flange)

Manufacturer

Lapp

Catalog Number

10369

fi - Connectors, hot line

Over Armor Rods

<u>Manufacturer</u>	<u>Catalog Number or Series (Al to Al)</u>	<u>Catalog Number or Series (Al to Cu)</u>
Blackburn	PGH	-
Electrical Specialty	AHC-500	AHC-500 GP
Fargo	GA-100 Series	GA-100C Series



fj, fk, fl  
July 1984

fj - Bracket, extension

(for use in mounting oil circuit reclosers or sectionalizers)  
See Drawing VM3-10A

	<u>Through Bolt Type</u>	<u>Band Type</u>
Aluma-Form	TBRSM-1, TB 2M1--9*	RSM-1
Dixie	D-2359-M	
Joslyn	J2357M	
McGraw-Edison	DR 2E 3	

\*For mounting double lug reclosers.

fk - Bracket, oil circuit recloser or sectionalizer

(for cluster mounting of three oil circuit reclosers on pole)

Aluma-Form	RSM-3, 6M3-9*
*McGraw-Edison	DT8C1
Turner	695-3

\*Suitable for 14.4 and heavy duty 7.2 kV.

fl - Rack, primary metering

(for cluster mounting of primary metering equipment on pole)

Aluma-Form	PMM Series
Turner	3CT-PT

fm - Bracket, Arrester and Pothead Extension

For Distribution Arrester and Cutout - Pole Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		1HCA-18 Series	R3CA-48
Anderson/ Square D	12.5/7.2 kV 24.9/14.4 kV	COB-E-120-TGL COB-E-180-TGL	
Bethea Hardware	12.5/7.2 kV 24.9/14.4 kV	VIB3-18-R1-GC-C VIB3-18-GC	
Chance		C653-1038	C653-1056
Continental	12.5/7.2 kV 24.9/14.4 kV	IACB-12-5LGE IACB-18-5LGE	GPB-3-0-568M-3012-CAT 12 GPB-3-0-568M-4017-CAT 12
Dixie	12.5/7.2 kV 24.9/14.4 kV	D-1580 D-1583	D27211-G
Flagg (MIF)	12.5/7.2 kV 24.9/14.4 kV	PA613H PA619H	
McGraw-Edison		DC34B3	
Power Line Hardware	12.5/7.2 kV	CA-12-3GL	
Shakespeare		892-18	670-40
Universal Electric		SAB-3-18-GC	

For two distribution arresters in parellel or one  
arrester and cutout - crossarm mounted

<u>Manufacturer</u>	<u>Catalog No.</u>
McGraw-Edison	DM23B2

For Intermediate Arrester Mounting

<u>Manufacturer</u>		<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form		WBMA-1	R3CSA-48
Bethea Hardware	12.5/7.2 kV	VIB3-18-R1-GC-C	

fn  
July 1984

fn - Bracket, Cutout Extension

<u>Manufacturer</u>		<u>Catalog Number</u>
Anderson Elec./ Square D	12.5/7.2 kV 24.9/14.4 kV	COB-E-120-TGL COB-E-180-TGL
Bethea Hardware	12.5/7.2 kV 24.9/14.4 kV	VIB3-12F-GC VIB3-18-GC
Chance		C653-1038
Continental	12.5/7.2 kV 24.9/14.4 kV	IACB-12-5-LGE IACB-18-5-LGE
Flagg (MIF)	12.5/7.2 kV 24.9/14.4 kV	PA613H PA619H
McGraw-Edison		DC34B1
Power Line Hardware	12.5/7.2 kV	CA-12-3GL
Shakespeare		892-18
Universal Electric		SAB-3-18-GC

fo  
July 1984

fo - Bracket, Transformer Secondary, Insulated

<u>Manufacturer</u>	<u>Bracket Without Insulator</u>	<u>Bracket With 2<math>\frac{1}{4}</math>" Diameter Spool Insulator</u>	<u>Bracket With 3-1/8" Diameter Spool Insulator</u>
Chance	-	9113S	9114S
Joslyn	-	J6765-A	J6765
McGraw-Edison	DT4M1	DT4M13	DT4M11
Utilities Service	865	865/208	865/205

Conditional List

fq  
July 1984

fq - Laminated Upswept Arms

Applicable Specification: REA Specification DT-5B  
Applicable Drawing: REA Drawing TUS-1

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Hughes Brothers</u>		
Types: C-4080A (5-1/8" width)	1095	1. To obtain experience.
C-4080B (5-1/8" width)	8/11/76	
C-4113A (3-1/8" width)	1113	2. For use only in scenic
C-4113B (3-1/8" width)	4/28/77	and urban areas where right-of-way is limited.

fr  
July 1984

fr - Triplex Cable Support Clamp  
(See Drawing M24)

Manufacturer

Catalog No.

Fargo

GM-140A

Flagg

PA392

Conditional List  
fs  
July 1984

fs - Pole Bearing Plate

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Flagg (MLF)</u> P 325B	785 2/20/64	1. To obtain service and operating experience on cross-braced transmission structures.  2. For determining corro- sion resistance.  3. For determining structure uplift capa- bility of the pole under various soil and moisture conditions.
<u>Continental</u> PB-80-7	1114 5/12/77	(Same as above.)
<u>Bethea Hardware</u> PBP-156-7	1070 7/24/75 1278 4/12/84	(Same as above.)
<u>Dixie</u> D-6370-GR	1210 4/16/81	(Same as above.)



fu  
July 1984

fu - Swinging angle bracket and guying plate

(TRANSMISSION)

Manufacturer

Joslyn

Catalog Number

J22712.3 (bracket and guy plate)  
J22714 (plate only)

fv  
July 1984

fv - Guying Attachments  
Transmission

Guying Tees

Manufacturer

Catalog No.

Joslyn

J21480-A

Pole Eye Plates

Bethea Hardware

PE6-77A

Continental

EPR-66S-12

Flagg (MIF)

PX37D

fv - Guy Attachment  
Pole Bands with Through Bolts  
for Transmission Lines

Strength Ratings: 25,000 lbs. ultimate loading  
(45° guy angle)\*

<u>Manufacturer</u>	<u>Pole Diameter</u>	<u>Pole Band With Through Bolts and Associated Hardware**</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Hughes	7-10" 10-12"	3108 C.5 3108 C.6	1172 9/20/79	To obtain experience.

\*For a 30° guy angle, capacity of pole bands should be derated.

\*\*Appropriate connecting links (Item du(1)) should be ordered with the pole band.

ga - Watthour and Watthour-Demand Meters  
1Ø, 2 and 3 wire or 2/3 wire 120/240 volts

Self-Contained Types					
Manufacturer 1	Type of Base 2	Watthour Meter Type 3	Mechanical Demand Watthour Type 4	Thermal Demand Watthour Type 5	Number of Terminals 6
Duncan	Bottom Con. Socket	- MS	- BMS-2S	- TMS	- 4
General Electric	Bottom Con. Socket	I50A I70S	IM50A IM70S	- -	4 4
Sangamo	Bottom Con. Socket	J3A J4S	J3DA J4DS	J3TA J3TS	- 4
Westinghouse	Bottom Con. Socket	D2A D5S	D2AM D5SM	- D2SH	- 4
Transformer Rated Types					
Duncan	Bottom Con. Socket	- MS	- BMS	- TMS	- 5 or 6
General Electric	Bottom Con. Socket	I50A I70S	IM50A IM70S	- -	5 or 6 5 or 6
Sangamo	Bottom Con. Socket	J3A J4S	J3DA J4DS	J3TA J3TS	- 5 or 6
Westinghouse	Bottom Con. Socket	D2A D2S	D2AM D2SM	- -	- 5 or 6

ga - Watthour and Watthour-Demand Meters  
Polyphase 2 element - 3 wire, 240 volts - Delta and Network

<u>Self-Contained Types</u>					
1	2	3	4	5	6
Manufacturer	Type of Base	Watthout Meter Type	Mechanical Demand Watthour Type	Thermal Demand Watthour Type	Number of Terminals
Duncan	Bottom Con. Socket	- MT-12S or 13S	- BMT-12S or 13 S	- TMT-12S	- 5 or 8
General Electric	Bottom Con. Socket	V62A V62S	VM62A VM62S	- -	5 -
Sangamo	Bottom Con. Socket	S2A or S3A S2S or S3S	S2DA or S3DA S2DS or S3DS	PWAP PWS or SP	5 or 8 -
Westinghouse	Bottom Con. Socket	- D5S 5	- D5S 5M	-	-
<u>Transformer Rated Types</u>					
Duncan	Bottom Con. Socket	MT-5A MT-5S	BMT-5A BMT-5S	TMT-5A TMT-5S	8 8
General Electric	Bottom Con. Socket	V63A V63S	VM63A VM63S	- -	8 -
Sangamo	Bottom Con. Socket	S3A S3S	S3DA S3DS	PWAP PWS	- 8
Westinghouse	Bottom Con. Socket	D5A -2 D5S -2	D5A 2M D5S 2M	- D4S -2H	- 8

ga - Watthour and Watthour-Demand Meters  
Polyphase 2 element - 4 wire Delta - 120/240 volts

<u>Self-Contained Types</u>					
1	2	3	4	5	6
Manufacturer	Type of Base	Watthout Meter Type	Mechanical Demand Watthour Type	Thermal Demand Watthour Type	Number of Terminals
Duncan	Bottom Con. Socket	- MT-15S	- BMT-15S	- TMT-15S	- 7
General Electric	Bottom Con. Socket	V66A V66S	VM66A VM66S	- -	7 -
Sangamo	Bottom Con. Socket	S6A S6S	S6DA S6DS	PWA Delta PWS Delta	- 7 or 8
Westinghouse	Bottom Con. Socket	D5A 7 D5S 7	D5A 7M D5S 7M	- -	7 or 8 -

Transformer Rated Types

Duncan

General Electric

Sangamo

Westinghouse

Not shown in REA Bulletin 161-12

ga - Watthour and Watthour-Demand Meters  
Polyphase - 2-1/2 element - 4 wire wye - (120/208) (277/480) volt

Self-Contained Types					
1 Manufacturer	2 Type of Base	3 Watthout Meter Type	4 Mechanical Demand Watthour Type	5 Thermal Demand Watthour Type	6 Number of Terminals
Duncan	Bottom Con. Socket	- MT-14S	- BMT-14S	- TMT-14S	- 7
General Electric	Bottom Con. Socket	V65A V65S	VM65A VM65S	- -	7 -
Sangamo	Bottom Con. Socket	S5A S5S	S5DA S5DS	PWAY PWSY	- 7 or 8
Westinghouse	Bottom Con. Socket	D5A8 D5S8	D5A8M D5S8M	- -	7 -
Transformer Rated Types					
Duncan	Bottom Con. Socket	MT-6A MT-7S or 6S	BMT-6A BMT-7S or 6S	TMT-6A TMT-7S or 6S	10 7 or 13
General Electric	Bottom Con. Socket	V65A V65S	VM65A VM65A	- -	7 or 13 -
Sangamo	Bottom Con. Socket	S5A S5S	S5DA S5DS	PWAY PWSY	- 13
Westinghouse	Bottom Con. Socket	D5A8 D5S8	D5A8M D5S8M	- D4S8H	- 13



ga - Watthour and Watthour-Demand Meters  
Polyphase - 3 element - 4 wire wye - (120/208) (277/480) volt

<u>Self-Contained Types</u>					
Manufacturer 1	Type of Base 2	Watthout Meter Type 3	Mechanical Demand Watthour Type 4	Thermal Demand Watthour Type 5	Number of Terminals 6
Duncan	Bottom Con. Socket	- MT-16S	- BMT-16S	- -	- 7
General Electric	Bottom Con. Socket	V64A V64S	VM64A VM64S	- -	- 7 or 8
Sangamo	Bottom Con. Socket	S4A S4S	S4DA S4DS	- -	- 7 or 8
Westinghouse	Bottom Con. Socket	D5-A3 D5-S3	D5A 3M D5S 3M	- -	- 7 or 8
<u>Transformer Rated Types</u>					
Duncan	Bottom Con. Socket	MT-9A MT-9S or 10S	BMT-9A BMT-9S or 10S	- -	12 13
General Electric	Bottom Con. Socket	V64A V64S	VM64A VM64S	- -	- 13
Sangamo	Bottom Con. Socket	S4A S4S	S4DA S4DS	- -	- 13

ga - Watthour and Watthour-Demand Meters

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>General Electric</u>		
Socket or bottom connected watthour and watthour-demand meters, 2.5 amp., Class 20, V-60 and VM-60 Series	907 12/5/68	1. To obtain experience.  2. To be used only where Class 20 meters are permitted by local regulatory bodies.
<u>Westinghouse</u>		
Socket or bottom connected watthour and watthour-demand meters, 2.5 amp., three element Class 20, Types D4S-3, D4S-3M, D4A3 and D4A3M.	960 2/4/71	1. To obtain experience.  2. To be used only where Class 20 meters are permitted by local regulatory bodies.
Types D4A8, D4S8, D4A8M, D4S8M, D4A2, D4S2, D4A2M and D4S2M	1089 4/29/76	
Socket base, 3 wire, 1Ø watthour meter, Type D4S, Class 320	1149 10/19/78	1. To obtain experience.  2. To be used only where Class 320 meters are permitted by local regulatory bodies.  3. To be used only with sockets rated for Class 320 service.
<u>Duncan</u>		
Special base, 3 wire, 1Ø watthour meter, Type MS-K, Class 400 watthour and mechanical demand Type BMS-K	947 7/9/70	1. To obtain experience.  2. To be used only where Class 400 meters are permitted by local regulatory bodies.
watthour and thermal demand Type TMS-2K	1113 4/28/77	
Socket base, 3 wire, 1Ø watthour meter, Type MS-E, Class 300	1113 4/28/77	1. To obtain experience.  2. To be used only where Class 300 meters are permitted by local regulatory bodies.  3. To be used only with sockets rated for Class 300 service.

Conditional List  
ga(2)  
July 1984

ga - Watthour and Watthour-Demand Meters

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Sangamo</u> Socket base, 3 wire 1Ø watthour meter, Type J4ES, Class 320	1103 12/2/76	1. To obtain experience.  2. To be used only where Class 320 meters are permitted by local regulatory bodies.  3. To be used only with sockets rated for Class 320 service.

gb - Meter Sockets

Type or Catalog Number

<u>Manufacturer</u>	<u>Ring</u>	<u>Ringless</u>	<u>No. Jaws</u>	<u>Rating, Amps.</u>
Anchor#	1000 Series(1003-1006) 1100 Series(1100-1109) 1200 Series(1201-1209)  1600 Series(1600-1661) 1500 Series(1500-1526) 1500 Series(1530-1536) 1500 Series(1540-1546) 1400 Series(1405-1473)	1000 Series(1003-1006) 1100 Series(1100-1109) 1200 Series(1201-1209) 1200/1300 Series(1275-1300) 1600 Series(1600-1661) 1500 Series(1500-1526) 1500 Series(1530-1536) 1500 Series(1540-1546) 1400 Series(1405-1473)	4, 5 4, 5, 7 4, 5 4, 5, 7 4, 5 4, 5 4, 5 4, 5, 6, 7, 8, 13	100 150 200 200 320 100/125 per sta. 150 per sta. 200 per sta. 20/100
Crouse-Hinds (Arrow-Hart/ Murray)	SJ Series* (Single) SD Series* (Mult.) SN Series* (Single) SS Series* (Single)	RJ Series* (Single) RD Series* (Mult.) RN Series* (Single) RS Series* (Single) RH Series* (Single)	4, 5, 6 4, 5, 6 4, 5, 6 4, 5, 6 5, 7	100 125 per sta. 100 200 200 HD

#Available with UL label  
\*UL label

gb - Meter Sockets

<u>Manufacturer</u>	<u>Type or Catalog Number</u>		<u>No. Jaws</u>	<u>Rating, Amps.</u>
	<u>Ring</u>	<u>Ringless</u>		
Duncan	C#			
		Overhead		
		CQ#	4, 5, 6	100, 200
		HQ#	4, 5 & 7	200
		HQ-T	4, 5 & 7	200 HD
Durham		Underground	6, 7, 8 & 13	20
		CQ-U#	4, 5 & 7	200
		HQ-U#	4, 5 & 7	200 HD
		R-7000 Series#	4 or 5	100
		R-71000 Series#	4 or 5	200
Dyna-Tech		R-81000 Series#	4 or 5	200
		Overhead		
		1100-C - 1107-C	4 & 5	100
		1300-C - 1307-C	4 & 5	100
		2100-CH - 2107-CH	4 & 5	200
General Electric	R-2# S-1#	2300-CH - 2307-CH	4 & 5	200
		Underground		
		2590-CHU - 2597-CHU	4 & 5	200
		2790-CHU - 2797-CHU	4 & 5	200
		2090-CHU - 2097-CHU	4 & 5	200
General Switch		2290-CHU - 2297-CHU	4 & 5	200
		SI-73#	4, 5 & 6	100
		SI-73# for underground	4, 5 & 6	100
		SV-60#	4, 5 & 6	200
		SI-60#	4, 5 & 6	200
* UL Label # Available with UL label		SI-60	7, 8 & 13	100-200, 20
			4, 5 & 6	100
			5 & 6	20
			4, 5 & 6	100
		42100 Series*		

gb - Meter Sockets

<u>Manufacturer</u>	<u>Type or Catalog Number</u> <u>Ring</u>	<u>Ringless</u>	<u>No. Jaws</u>	<u>Rating, Amps.</u>
Kearney/B & C		WV-100 Series	4, 5, 6	100
		WVL-100 Series#	4, 5, 6	100
		WVL-150 Series#	4, 5, 6	150
		WVEL-200 Series#	4, 5, 6	200
		WVHQ45-200 Series#	4, 5	200HD
Milbank		WVHQ78-200 Series#	7	200HD
		Overhead		
		S7462, 3, 4, 5, 6	4 or 5	100
		U7362, 3, 4, 5, 6	4 or 5	100
		S7486 Series, K7486 Series*	4 or 5	150
Osborn		S7262 Series, U7262 Series*	4 or 5	200
		S7021 Series, U7021 Series*	4 or 5	200 (HD)
		S9550 Series, U9550 Series*	4 or 5	200 (HD)
		S9700 Series, U9700 Series*	7	200 (HD)
		Underground		
Osborn		S8086-XL, U8086-XL*	4 or 5	100
		S8084-XL, U8084-XL*	4 or 5	150
		S7040-XL, U7040-XL*	4 or 5	200
		S9551-XL, U9551-XL*	4 or 5	200 (HD)
		S9701-XL, U9701-XL*	7	200 (HD)
Osborn		ORA-3 Series	4, 5 (overhead)	150
		ORA-4 Series	4, 5 (overhead)	200
		URA-4 Series	4, 5 (underground)	150
		URA-5 Series	4, 5 (underground)	200



gb - Meter Sockets			
<u>Manufacturer</u>	<u>Type or Catalog Number</u> <u>Ring</u>	<u>No. Jaws</u>	<u>Rating, Amps.</u>
Superior	8048	4, 5	100
		4, 5	100
	314*	4, 5	150
	314*	4, 5	200
		4, 5	150 per sta.
	382 Series	4, 5	200 per sta.
		4, 5	200 3Ø 4w Y
		7	or Delta
			per sta.
		5, 7	200 3Ø 4w Y
Superior			or Delta
			600 V
Westinghouse			

# Available with UL Label  
\* UL Label  
\*\* Transformer rating in first figure; maximum loading shown by second figure



gb - Meter sockets

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Duncan</u> Meter mounting device 400 ampere, Type K-4# for use with Type MS-K, 1Ø Duncan meters	947 7/9/70 1136 4/6/78	1. To obtain experience. 2. To be used only where Class 400 meters are permitted by local regulatory bodies.
Socket type HQ-4S 4 jaws rated for Class 300 service	1136 4/6/78	1. To obtain experience. 2. To be used only where Class 300 meters are permitted by local regulatory bodies.
<u>Durham</u> M-400 ampere 4 or 5 jaws for use with Class 10 meters	1086 3/18/76	1. To obtain experience.
<u>Milbank</u> Type S1079-F, 4 jaws rated for Class 320 service	1103 12/2/76	1. To obtain experience.

#Available with UL label.

gj  
July 1984

gj - Crossarm Assemblies and Arm Spacers

Distribution

Wood crossarm assembly complete with braces  
and attaching hardware, fittings and bolts

Crossarm Assembly

<u>Manufacturer</u>	<u>Crossarm Size</u> (inches)	<u>Catalog No.</u>
Hughes Brothers	$3\frac{1}{2}$ x $4\frac{1}{2}$ x 8'-0"	2890A
	$3\text{-}3/4$ x $5\text{-}3/4$ x 8'-0"	2890B
	$3\text{-}3/4$ x $7\text{-}3/4$ x 8'-0	2892-A
	$3\text{-}3/4$ x $7\text{-}3/4$ x 10'-0"	2892-B

Twin Arm Spacer\*

To be used with standard hardware, 8' x 3-5/8" x 4-5/8" crossarm  
and 28" wood braces

Flagg

PX240

\*Restricted to applications where the conductor's maximum design  
tension is less than 1250 lbs. and to conductor sizes 1/0 ACSR and  
below.

gw - Crossarm Assembly for H-Frame Construction

Applicable Specification: REA Specification T-7, Revision dated November 1962  
 Applicable Drawing : TH-11B Series (161 kV maximum)  
 No braces (TH-11B)  
 Two vee braces on outside (TH-11BVO)  
 Two vee braces on inside (TH-11BVI)  
 Four vee braces (TH-11BV4)

3-5/8" x 9-3/8" x 33' wood crossarm assembly complete with attaching hardware, fittings, bolts and 3-3/8" x 5-3/8" braces.

<u>Catalog Nos. or Drawing Nos.</u>				
	<u>TH-11B</u>	<u>TH-11BVO</u>	<u>TH-11BVI</u>	<u>TH-11BV4</u>
(Assemblies)	<u>Items</u> gw	<u>Items</u> gw and vo	<u>Items</u> gw and vi	<u>Items</u> gw and vv
American Crossarm and Conduit Co. (1)	70250	7025VO	7025VI	7025V4
Brooks Lumber (1,2)	6411	6411-1	6411-2	6411-3
Cascadian (1,2)	CCC11B72	CCC11B72-VO	CCC11B72-VI	CCC11B72-V4
Hughes Brothers (1,2)	C3316-B	C3316-B	C3316-B	C3316-B

- 1 - Fixed spacer fitting sizes as required
- 2 - Adjustable spacers are available

gw-2  
July 1984

gw - Crossarm Assembly for H-frame Construction  
(Double Arm) 230 kV (Small Angle)

Applicable Specification: REA Specification T-8  
Drawing : TH-231B

Assembly complete with attaching hardware, fittings, bolts and braces.

Crossarm 3-5/8" x 2-3/8"

Manufacturer

Catalog No.

American Crossarm & Conduit (1)

8026VB

Brooks (1,2)

64231

Cascadian (1,2)

CCC231B82

Hughes (1,2)

C-3338-B

Crossarm 5-1/8" x 7-1/2"

Brooks (1,2)

64231L

Cascadian (1,2)

CCC231BT

Hughes (1,2)

C-3338-BL

- 1 - Fixed spacer fitting sizes as required.
- 2 - Adjustable spacers are available.

gw - Crossarm Assembly for H-Frame Construction

Applicable Specification: REA Specification T-7  
Applicable Drawing: Drawing TH-11B Series (161 kV maximum)

Condition: These adjustable spacers are not interchangeable with fixed spacers, and are only for use where the Borrower has determined that interchangeability with fixed spacers or standard adjustable spacers will not be required in the future.

	<u>Catalog Numbers or Drawing Numbers</u>			
	<u>TH-11B</u>	<u>TH-11BVO</u>	<u>TH-11BVI</u>	<u>TH-11BV4</u>
American Crossarm and Conduit	70250	7025V0	7025VI	7025V4

Conditional List  
gw(2)

gw - Crossarm Assembly for H-Frame Construction  
(Double Arm) 230 kV (Small Angle)

Applicable Specification: REA Specification T-8  
Applicable Drawing: Drawing TH-231B

Condition: These adjustable spacers are not interchangeable with fixed spacers, and are only for use where the Borrower has determined that interchangeability with fixed spacer or standard adjustable spacers will not be required in the future.

Catalog Numbers or Drawing Numbers  
Crossarm 3-5/8" x 9-3/8"

American Crossarm and Conduit	8026VB
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gx - Single Pole Steel Structures with Arms

Applicable Specification: REA Specification for Single Pole Steel  
Structures Complete with Arms, T-9

Manufacturer

Meyer

Single circuit,  
delta conductor  
arrangement - Type 1  
Single circuit,  
vertical conductor  
arrangement - Type 2  
Double circuit conductor  
arrangement - Type 3  
Single circuit, large angle  
arrangement - Type 4

Union Metal

Single circuit,  
delta conductor  
arrangement - Type D  
Single circuit,  
vertical conductor  
arrangement - Type E  
Double circuit conductor  
arrangement - Type H  
Single circuit, large angle  
arrangement - Type K



gx - Single Pole Steel Structures with Arms

Applicable Specification: REA Specification for Single Pole Steel  
Structures Complete with Arms, T-9

Manufacturer

Type

C-E American

Single circuit,  
delta conductor  
arrangement - Type 1  
Single circuit,  
vertical conductor  
arrangement - Type 2  
Double circuit conductor  
arrangement - Type 3  
Single circuit, large angle  
arrangement - Type 4

Muskogee Iron Works

Single circuit,  
delta conductor  
arrangement - Type SCD  
Single circuit,  
vertical conductor  
arrangement - Type SCV  
Double circuit conductor  
arrangement - Type DC  
Single circuit, large  
angle arrangement - Type SCV

Power Enterprises, Inc.

Single circuit,  
delta conductor  
arrangement - Type 1  
Single circuit,  
vertical conductor  
arrangement - Type 2  
Double circuit conductor  
arrangement - Type 3  
Single circuit, large  
angle arrangement - Type 4



gx-3  
July 1984

gx - Single Pole Steel Structures with Arms

Applicable Specification: REA Specification for Single Pole Steel  
Structures Complete with Arms, T-9

Manufacturer

Type

Anchor Metals

Single circuit delta  
conductor arrangement - TUS-1  
Single circuit, vertical  
conductor arrangement - TUS-2  
Double circuit conductor  
arrangement - TUS-3  
Single circuit, large angle  
arrangement - TUS-4

Valmont Industries, Inc.

Single circuit delta  
conductor arrangement S/C-DC  
Single circuit, vertical  
conductor arrangement S/C-VC  
Double circuit conductor  
arrangement D/C-SC  
Single circuit, large  
angle arrangement S/C-L/A

**gy - Crossarm Assembly for H-frame Construction  
(Double Arm)**

Applicable Specification: REA Specification T-7, Revision dated  
November 29, 1962

Applicable Drawing : TH-10 Series  
No braces (TH-10)  
Two vee braces on outside (TH-10VO)  
Two vee braces on inside (TH-10VI)  
Four vee braces (TH-10V4)

3-5/8" x 9-3/8" x 32' wood crossarm assembly complete with  
attaching hardware, fittings, bolts and 3-3/8" x 5-3/8"  
braces.

Catalog Nos. or Drawing Nos.

	<u>TH-10</u>	<u>TH-10VO</u>	<u>TH-10VI</u>	<u>TH-10V4</u>
	<u>Items</u>	<u>Items</u>	<u>Items</u>	<u>Items</u>
(Assemblies)	gy	gy and vo	gy and vi	gy and vv
American Crossarm & Conduit Company (1)	70208	70228	702281	70248
Brooks Lumber (1,2)	6410	6410-1	6410-2	6410-3
Cascadian (1,2)	CCC1071	CCC1071-VO	CCC1071-VI	CCC1071-V4
Hughes Brothers (1,2)	C-3316-A	C-3316-A	C-3316-A	C-3316-A
Niedermeyer-Martin(1)	N-6710	N-6711	N-6712	N-6713

- 1 - Fixed spacer fitting sizes as required
- 2 - Adjustable spacers are available

gy-2  
July 1984

gy - Crossarm Assembly for H-frame Construction  
(Double Arm) 230 kV (Tangent)

Applicable Specification: REA Specification T-8  
Drawing : TH-230

Assembly complete with attaching hardware, fittings, bolts and braces.

Crossarm 3-5/8" x 3-3/8"

<u>Manufacturer</u>	<u>Catalog No.</u>
American Crossarm & Conduit (1)	8025V4
Brooks (1,2)	64230
Cascadian (1,2)	CCC23081
Hughes (1,2)	C-3338-A
Niedermeyer-Martin (1)	N-6720

Crossarm 5-1/8" x 7-1/2"

Brooks (1,2)	64230L
Cascadian (1,2)	CCC230T
Hughes (1,2)	C-3338-AL

- 1 - Fixed spacer fitting sizes as required.  
2 - Adjustable spacers are available.

gy - Crossarm Assembly for H-Frame Construction  
(Double Arm)

Applicable Specification: REA Specification T-7  
Applicable Drawing: Drawing TH-10 Series

Condition: These adjustable spacers are not interchangeable with fixed spacers, and are only for use where the Borrower has determined that interchangeability with fixed spacers or standard adjustable spacers will not be required in the future.

	<u>Catalog Numbers or Drawing Numbers</u>			
	<u>TH-10</u>	<u>TH-10V0</u>	<u>TH-10VI</u>	<u>TH-10V4</u>
American Crossarm and Conduit	70208	70228	70228I	70248

Conditional List  
gy(2)

gy - Crossarm Assembly for H-Frame Construction  
(Double Arm)

Applicable Specification: REA Specification T-8  
Applicable Drawing: Drawing TH-230

Condition: These adjustable spacers are not interchangeable with fixed spacers, and are only for use where the Borrower has determined that interchangeability with fixed spacers or standard adjustable spacers will not be required in the future.

	<u>Crossarm 3-5/8" x 9-3/8"</u>
	<u>Catalog Number</u>
American Crossarm and Conduit	8025V4

gz-1  
July 1984

gz - Crossarm Assembly for Wishbone Construction, "Z" Type  
(Single Arm)

Applicable Specification: REA Specification T-5  
Applicable Drawings : REA Drawings TSZ-1 and TMZ-1

3-5/8" x 5-5/8" wood crossarm assembly complete with  
brace and attaching hardware, fittings, and bolts

The following manufacturers have shown compliance with the applicable  
specifications for this assembly:

<u>Manufacturer</u>	<u>Catalog Nos. or Drawing Nos.</u>
American Crossarm & Conduit Co.	601TSZ and 602TSZ
Brooks Lumber	64Z1
Hughes Brothers	C-3162-A and C-3162.10

gz - Crossarm Assembly for Wishbone Construction, "Z" Type  
(Double Arm)

Applicable Specification: REA Specification T-5  
Applicable Drawings : REA Drawings TSZ-2 and TMZ-2

3-5/8" x 5-5/8" wood crossarm assembly complete with  
brace and attaching hardware, fittings and bolts

The following manufacturers have shown compliance with the applicable  
specifications for this assembly:

<u>Manufacturer</u>	<u>Catalog Nos. or Drawing Nos.</u>
American Crossarm & Conduit Co.	602TSZ
Brooks Lumber (2)	64Z2
Hughes Brothers	C-3162-B and C-3162.10

(2) Adjustable spacers are available.



sb - Switch, disconnect (single-pole, hook-operated station class)

NEMA standard switches for station or line  
structure use where single-pole switching is permissible

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Ratings</u>	<u>System Voltages Line to Line</u>
Bridges	EH	15 thru 69 kV	12.5 thru 69 kV
	EHL(L)	15 thru 34.5 kV	12.5 thru 34.5 kV
Brown Boveri Elec. (ITE)	HPL	15 thru 69 kV	12.5 thru 69 kV
	DS(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
G & W Electric	B-2M	15 thru 69 kV	12.5 thru 69 kV
	EV(PL)	15 thru 34.5 kV	12.5 thru 34.5 kV
Hi-Voltage (Joslyn)	HU	15 thru 34.5 kV	12.5 thru 34.5 kV
	HI	15 thru 34.5 kV	12.5 thru 34.5 kV
Johnson	HPT	15 thru 69 kV	12.5 thru 69 kV
Kearney	M-72(PL)	15 thru 69 kV	12.5 thru 69 kV
	H-72	15 thru 34.5 kV	12.5 thru 34.5 kV
McGraw-Edison	D2(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
MEMCO	STV	15 thru 69 kV	12.5 thru 69 kV
	STU	15 thru 69 kV	12.5 thru 69 kV
Morgan	DHS (PL)	15 thru 69 kV	12.5 thru 69 kV
ITT Royal Switchgear	BT	15 thru 69 kV	12.5 thru 69 kV
	BLT(PL)	15 and 23 kV	12.5 thru 24.9 kV
S & C	LBD(PL)	15 thru 34.5 kV	12.5 thru 34.5 kV
	Alduti(L)	15 and 25 kV	12.5 thru 24.9 kV
Seeco	BT	34.5 thru 69 kV	34.5 thru 69 kV
Siemens-Allis	HA	15 thru 69 kV	12.5 thru 69 kV
	HS(PL)	15 and 25 kV	12.5 thru 24.9 kV

(L) Means solid material load interrupters are available and accepted.

(LV) Means vacuum interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available for voltages 34.5 kV and below. Consult switch manufacturer concerning loop switching applications at higher voltages.



sb - Switch, disconnect (single-pole, hook-operated station class)

NEMA standard switches for station or line  
structure use where single-pole switching is permissible

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Ratings</u>	<u>System Voltages Line-to-Line</u>
Southern States	PBO	15 thru 69 kV	12.5 thru 69 kV
	*PBN	15 thru 23 kV	12.5, 13.2, 24.9 kV
USCO	HH(PL)	15 thru 69 kV	12.5 thru 69 kV

(L) Means solid material load interrupters are available and accepted.

(LV) Means vacuum interrupters are available and accepted.

\* With steel base only.

(PL) Means hooks for portable load interrupters are available for voltages 34.5 kV and below. Consult switch manufacturer concerning loop switching applications at higher voltages.

Conditional List  
sb(1)  
July 1984

sb - Switch, hookstick  
(line tension switches)

for use on 12.5/7.2 kV systems only

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Bridges</u>	1279	
125	5/3/84	To obtain experience
<u>Chance</u>	1279	
LTD06150-H	5/3/84	To obtain experience

NOTE: All switches listed on this page have hooks for portable load interrupters.

sb - Switch, disconnect (single-pole, hook-operated  
distribution class)\*

For distribution line use where power class insulation is not required  
and single-phase switching is permissible.

(Not suitable for substation use)

<u>Manufacturer</u>	<u>Type</u>	<u>Voltage Rating</u>	<u>System Voltage Line-to-Line</u>
Brown Boveri Elec. (ITE)	DS(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
Chance	M3(PL)	15 and 27 kV	12.5 thru 24.9 kV
G & W Electric Company	EV(PL)	15 kV	12.5 kV
Kearney	D-73(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
McGraw-Edison	D2(PL)	15 and 25 kV	12.5, 13.2, 24.9 kV
Morgan	DHS (PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
ITT Royal	BLT(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
S & C	LBD(PL)	15 and 25 kV	12.5, 13.2, 24.9 kV
Siemens-Allis	HD(PL)	15 and 25 kV	12.5 thru 24.9 kV

NOTE: Switches on this page must be furnished with four bolts for  
double crossarm mounting.

(L) Means solid material load interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available.

(LV) Means vacuum interrupters are available and accepted.

\*Steel bases only.

sc - Regulators, Voltage  
12.5/7.2 kV  
13.2/7.62 kV

Applicable Specification: REA "Specification for Substation Regulators,"  
S-2

<u>Type</u>	<u>Size</u>	<u>Description</u>
<u>General Electric</u>		
VR-1	38.1 - 509 kVA	(SL) Single phase - step type
MLT	500 - 1000 kVA	(S) Three phase - step type
VML-32	500 - 833 kVA	(S) Single phase - vacuum step type
VMLT-32	1200 - 2800 kVA	(S) Three phase - vacuum step type
<u>McGraw-Edison</u>		
VR-32	19.1 - 500 kVA	(SL) Single phase - step type
AB	50 amp.	(L) Single phase - step type (Auto-Booster)
<u>Siemens-Allis</u>		
JFR	38.1 - 667 kVA	(SL) Single phase - step type
<u>Westinghouse</u>		
UTS, UTT	167 - 1000 kVA	(S) Three phase - step type

(L) Indicates line use  
(S) Indicates substation use

sc - Regulators, Voltage  
24.9/14.4 kV

<u>Type</u>	<u>Size</u>	<u>Description</u>
<u>General Electric</u>		
VR-1	72 - 576 kVA	(SL) Single phase - step type
VML-32	500 - 833 kVA	(S) Single phase - vacuum step type
VMLT-32	1200 - 4666 kVA	(S) Three phase - vacuum step type
<u>McGraw-Edison</u>		
VR-32	72 - 833 kVA	(SL) Single phase - step type
AB	50 amp.	(L) Single phase - step type (Auto-Booster)
<u>Siemens-Allis</u>		
JFR	72 - 833	(SL) Single phase - step type

(L) Indicates line use  
(S) Indicates substation use

July 1984

## SC - Regulators, Voltage

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Siemens-Allis</u> Three-phase, step-type substation regulator Type SFR (13.2/7.62 kV)	657 11/24/58	To obtain experience.
<u>General Electric</u> Three-phase, step-type substation regulator Type TMLT-32 (13.2/7.62 kV)	723 9/28/61	To obtain experience.

sd - Current Transformers  
Outdoor Types

<u>Manufacturer</u>	<u>.6 kV</u>	<u>15 kV</u>	<u>25 kV</u>	<u>34.5 kV</u>	<u>69 kV</u>
Associated Engineering	GT HA WEO	BB-15 LG-15	BB-25 LG-25 COF	LG-34.5 COF	COF-350
Astra	AA TFW AB AD				
Duncan	DCEW DCCW DCAB				
General Electric	JCR-0 JCW-0 JAK-0 JAD-0	JKW-5 JCK-5	JKW-6 JKW-150 KG-150	JKW-7 JKW-200 KG-200	JKW-350 KG-350
Sangamo	B6 Type	SMC-150			
Westinghouse	CSF/CMS CMF CLC/CLE	KOR-11 KON-11	ACT-150 KOR-15	ACT-200	ACT-350

NOTE: The transformer types listed above are accepted in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.



## Conditional List

sd

July 1984

sd - Current Transformers  
Outdoor Types

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Electromagnetic Ind.</u>		
Type UMCT, 0.6 kV	971 (7/15/71)	To obtain experience.
Type UCT, 0.6 kV	981	
Type CO3-110, 15 kV	12/16/71	
Type CO3-150, 25 kV	1076	
Type CO3-200, 34.5 kV	10/30/75	
Type IK-350, 69 kV	1216	
	7/23/81	
<u>Balteau Standard</u>		
Type KEWO-110, 15 kV	1212	To obtain experience.
Type KEWO-150, 25 kV	5/21/81	
Type KEWO-200, 34.5 kV		
Type KEWO-350, 69 kV		

se - Voltage Transformers

Outdoor Types

<u>Manufacturer</u>	<u>.6kV</u>	<u>1.2kV</u>	<u>15kV</u>	<u>25kV</u>	<u>34.5kV</u>	<u>69kV</u>
Associated Engineering	CL TL		PTT-150 SPOF-100 PTT-110	PTT-150 SPOF-150	POF-200	POF-350
Duncan	DVE-6 DVF-6					
General Electric	JVA-0 JVP-0		JVW-5 JVW-110	JVW-6 ET-150 JVT-150	JVW-7 ET-200 JVT-200	ET-350 JVT-350
Sangamo	T6A T7		SMP-150			
Westinghouse	PPM		VOG-11 VOZ-11	PTOM-150 APT-150	APT-200	APT-350 LPT-350

NOTE: The transformer types listed above are acceptable in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

Conditional List  
se  
July 1984

se - Voltage transformers

Outdoor Types

<u>Manufacturer</u>	<u>Meeting No. &amp; Date</u>	<u>Conditions</u>
<u>Astra</u>		
Type DB, 0.6 kV	1087	To obtain experience.
Type DA, 0.6 kV	4/1/76	
Type DF, 0.6 kV	1261	
	6/23/83	
<u>Electromagnetic Industries</u>		To obtain experience.
Type U-2-350, 69 kV	1216(7/23/81)	
Type PO4-110, 15 kV	1076	
Type PO5-150, 25 kV	10/30/75	
Type PO4-200, 34.5 kV	1222(11/5/81)	
Type U-450, 0.6 kV	1080(12/23/75)	
<u>Balteau Standard</u>		
VE02-110, 15 kV	1212	To obtain experience.
VE05-110, 15 kV	5/21/81	

sj  
July 1984

sj - Switches, oil circuit recloser by-pass

<u>Manufacturer</u>	<u>15 kV for Use on 12.5/7.2 kV Systems</u>	<u>27 kV for Use on 24.9/14.4 kV Systems</u>	<u>Current Rating Amperes</u>
Kearney	D73RB	D73RB	600
McGraw-Edison	FW77D7	FW77D9	600

sk  
July 1984

sk - Switch, regulator by-pass - disconnect  
For outdoor use

<u>Manufacturer</u>	<u>15 kV for use on 12.5/7.2 kV systems</u>	<u>27 kV for use on 24.9/14.4 kV systems</u>	<u>Current Rating Amperes</u>
Kearney	HB-65	HB-65	600
S & C Electric	XL	XL	600
Siemens-Allis	HR	HR	600
Southern States	BR	BR	400, 600

NOTE: All switches should be furnished with NEMA standard insulators and with 110 kV BIL rating (15 kV systems) or 150 kV BIL ratings (25 kV systems) for station use.

ak - Switch, regulator by-pass - disconnect  
For outdoor use

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u> Type B, 15 kV, 400 amperes 110 kV BIL for station use 95 kV BIL for line use	1035 2/21/74	To obtain experience.

NOTE: All switches should be furnished with NEMA standard insulators and  
with 110 kV BIL rating for station use.

s1  
July 1984

s1 - Switch, Combination Power Fuse and Disconnect

(Used with an additional disconnect switch to by-pass  
oil circuit reclosers at substations.)

<u>Manufacturer</u>	<u>15 kV for use on 7.2/12.5 systems</u>	<u>27 kV for use on 14.4/24.9 systems</u>
Hi Voltage	RFH	
Kearney	MHX	MHX
McGraw-Edison	FC2	
S & C Electric	SMD/LBD XS/LBD	SMD/LBD
ITT Royal Switchgear	TUF	
Southern States	SF	

NOTE: All switches and cutouts should be furnished with NEMA  
standard insulators.



sr - Steel for Substation Grounding, Copper-Clad or Galvanized

(See page av-2 for copper grounding conductor)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Copperweld Steel</u> 40% conductivity DSA Copperweld Strand in sizes: 1/2" (7 No. 6 AWG) 9/16" (7 No. 5 AWG) 5/8" (7 No. 4 AWG) 13/16" (19 No. 6 AWG) 7/8" (19 No. 5 AWG)	954 10/29/70	1. To obtain experience.  2. When used in soil with resistivity of 25 ohm-meters (2500 ohms per centimeter cube) or less, cathodic protection must be incorporated into the grounding design.
<u>Indiana Steel &amp; Wire</u> Steel strand, BB grade, Class C galvanized 5/8" (19 wire) 1/2" (7 wire) 9/16" (7 wire) 7/16" (7 wire)	1004 11/16/72 1133 2/16/78	1. To obtain experience.  2. When used in soil with resistivity of 25 ohm-meters (2500 ohms per centimeter cube) or less, cathodic protection must be incorporated into the grounding design.
<u>Bethlehem Steel</u> 7/16" and 1/2" steel strand, BB grade, Class C galvanized	1015 4/26/73	1. To obtain experience.  2. When used in soil with resistivity of 25 ohm-meters (2500 ohms per centimeter cube) or less, cathodic protection must be incorporated into the grounding design.

vx  
July 1984

vx - Cross brace assembly, 3-3/8" x 5-3/8"  
with hardware & fittings (Dwg. TM-110, REA Spec. T-7)

<u>Manufacturer</u>	<u>Catalog No.</u>
<u>American Crossarm &amp; Conduit</u>	
Item 1-vx	1100-1
Item 2-vx	1100-2
<u>Hughes Bros.</u>	
Item 1-vx	1042-1
Item 2-vx	1042-2
<u>Brooks Lumber</u>	
Item 1-vx	X6685-1
Item 2-vx	X6685-2
<u>Niedermeyer-Martin</u>	
Item 1-vx	N-6714-1
Item 2-vx	N-6714-2
<u>Cascadian</u>	
Item 1-vx	CCC-67-1
Item 2-vx	CCC-67-2

Cross Brace Assembly, 3-5/8" x 7-1/2" Min.  
with hardware and fittings

Applicable Specification: T-8  
Drawing: TM-110A

<u>Manufacturer</u>	<u>Catalog No.</u>
American Crossarm & Conduit	1200
Brooks	X-6695
Cascadian	CCC69
Hughes	2061A
Niedermeyer-Martin	N6721

TIMBER INSPECTION AGENCIES AND IDENTIFYING HAMMER STAMPS

<u>Inspection Agencies</u>	<u>Hammer Stamp</u>
Adams Engineering, Incorporated 5003 University Avenue, NE Minneapolis, Minnesota 55421	AE
Anding Inspection Company 3105 Delwood Drive Hattiesburg, Mississippi 39401	A in a circle
Bode Inspection Company P. O. Box 591 Lake Oswego, Oregon 97034	B
D. A. Cole Inspection Service, Incorporated P. O. Box 275 Hammond, Louisiana 70404	DAC
Gordon J. Daugharty Inspection Service 1985 Highway 2 East #29 Kalispell, Montana 59901	D
G. A. Donnelly Inspection Service 2600 Mill Avenue Bellingham, Washington 98225	GD
Froehling & Robertson, Incorporated P. O. Box 27524 Richmond, Virginia 23261	FR
Robert W. Hunt Company 810 South Clinton Street Chicago, Illinois 60607	H
Independent Inspectors Service Co., Inc. Route #3, Box 51 Gulfport, Mississippi 39503	II in a circle
Jason Associates, Incorporated P. O. Box 42 Fort Collins, Colorado 80522	J
McCallum Inspection Company P. O. Box 13266 Chesapeake, Virginia 23325	MIC
McCutchan Inspections, Incorporated 8525 N. Lombard Street Portland, Oregon 97203	MC
CM Rou Services, Incorporated 3059 Ken Dale Drive Mobile, Alabama 36606	CMR
Samco Inspection & Consulting Service 3638 Honeysuckle Road Montgomery, Alabama 36109	SC

TIMBER INSPECTION AGENCIES AND IDENTIFYING HAMMER STAMPS

<u>Inspection Agencies</u>	<u>Hammer Stamp</u>
Senft Inspection Service P. O. Box 836 Ponderay, Idaho 83852	S
Southern Wood Products Inspection Company P. O. Box 15263 Pensacola, Florida 32504	SWP in a circle
Southwestern Laboratories P. O. Box 8768 Houston, Texas 77009	SL
Thurlow Inspection Agency P. O. Box 123 Sandpoint, Idaho 83864	T
Timber Products Inspection P. O. Box 919 Conyers, Georgia 30207	TP
A. W. Williams Inspection Company, Inc. P. O. Box 2107 Mobile, Alabama 36601	AWW
Taylor Inspection and Consulting Company 3849 Woodley Road Montgomery, Alabama 36116	TIC

zz - Poles

Applicable preservatives: Creosote, pentachlorophenol-petroleum and waterborne salts (ACA and CCA)

(Firms listed on pages zz-1 through zz-7 are also qualified to treat crossarms. Crossarms should be fabricated at one of the plants listed on page g-1 or g-2.)

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
Alabama Wood Treating Corp.	-	Mobile, Ala.
American Creosote Works, Inc.	-	Jackson, Tenn. Louisville, Miss. Pensacola, Fla.
American Crossarm & Conduit Co. American Wood Arkwood	-	Chehalis, Wash. Richton, Miss. Omaha, Ark.
Atlantic Wood Industries, Inc.	-	Portsmouth, Va. Savannah, Ga. Vidalia, Ga. Fruitland, Md.
Baldwin Pole & Piling Co.	-	Bay Minette, Ala.
J. H. Baxter & Co.	Eugene, Ore.	Eugene, Ore. Long Beach, Calif. The Dalles, Ore. Arlington, Wash. Weed, Calif. Laramie, Wyo.
Benton Creosoting Co. (Kennedy Saw Mills)	-	Benton, La.
Broderick Wood Products Co.	-	Denver, Colo.
Brown Wood Products Co.	-	Brownville, Ala. Louisville, Ky.
Burke-Parsons-Bowlby Corp.	-	Leland, N.C.
Carolina Creosoting Corp.	-	Leland, N.C.
Cascade Pole Co.	- -	Tacoma, Wash. Olympia, Wash.
Cahaba Pressure Treated Forest Products, Inc.	-	Brierfield, Ala.

zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
Cowboy Timber Treating, Inc.	-	Manderson, Wyo.
Colfax Creosoting Co.	-	Pineville, La.
Conroe Creosoting Co.	-	Conroe, Texas
Crown Zellerbach Corp.	-	Gulfport, Miss. Mobile, Ala. Urania, La. Sallisaw, Okla.
Dant & Russell, Inc.	-	North Plains, Ore.
Davis Timber Company, Inc.		Hattiesburg, Miss.
Durable Wood Preservers, Inc.	-	Charlotte, N.C.
Eppinger and Russell	-	Chesapeake, Va.
Escambia Treating Co.	-	Brunswick, Ga. Pensacola, Fla. Camilla, Ga. Brookhaven, Miss.
Fernwood Industries	-	Fernwood, Miss.
Fordyce Wood Treaters, Inc.		Fordyce, Ark.
Garland Creosoting Company	-	Longview, Texas
Hart Creosoting Company	-	Jasper, Texas
Hoosier Treating Company	-	Gosport, Ind.
Huxford Pole & Timber Co., Inc.	-	Huxford, Ala.



zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
Idaho Pole Company	-	Bozeman, Mont.
International Paper Co. Wood Preserving Division	-	De Ridder, La. Joplin, Mo. Navasota, Texas *Wiggins, Miss.
Jasper Creosoting Co.	-	Jasper, Texas
Kerr-McGee Chemical Corp. Forest Products Division		Meridian, Miss. Columbus, Miss. Texarkana, Texas
Koppers Co., Inc.	-	Carbondale, Ill. *Denver, Colo. Florence, S.C. Gainesville, Fla. Grenada, Miss. Houston, Texas *Montgomery, Ala. N. Little Rock, Ark. *Oroville, Cal. Galesburg, Ill.
Lake States Wood Preserving, Inc.	-	Munising, Mich.

\*Cellon process also accepted.



zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
Langdale Company	Sweetwater, Tenn. Valdosta, Ga.	Sweetwater, Tenn. Valdosta, Ga.
Lockhart Lumber Company	-	Lockhart, Ala.
Lufkin Creosoting Co.	-	Lufkin, Texas
MacGillis & Gibbs	-	Madera, Cal.
McCormick & Baxter Creosoting Co.	-	*Portland, Ore. *Stockton, Cal.
L. D. McFarland Co.	Eugene, Ore.	Eugene, Ore.
Marion Pressure Treating Co.	-	Marion, La.
William C. Meredith Co.	-	Atlanta, Ga.
T. R. Miller Mill Co., Inc.	-	Brewton, Ala.
Madisonville Creosote Works	-	Madisonville, La.
Montana Pole & Treating Plant	-	Butte, Mont.
Niedermeyer-Martin Co. (Pacific Wood Treating Corp.)	-	Ridgefield, Wash.
Oeser Cedar Company	-	Bellingham, Wash.

\* Cellon process also accepted.

zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
Oliver Treated Products Co., Inc.	-	Hammond, La.
Pacific Wood Preserving	-	Cloverdale, Cal.
Panama Timber Co.	-	Panama, Okla.
Penta Wood Products, Inc.	-	Siren, Wisc.
Pressure Treated Timber Co.	-	Boise, Idaho
Selma Treating Company	-	Selma, Cal.
Southern Wood Piedmont Co.	-	Augusta, Ga. Baldwin, Fla. East Point, Ga. Macon, Ga. Wilmington, N.C.
Southeastern Wood Preserving, Inc.	-	Canton, Miss.
Southern Wood Preserving of Hattiesburg, Inc.	-	Hattiesburg, Miss.
Southwest Forest Industries	Prescott, Ariz.	Prescott, Ariz.
Stallworth Timber Co., Inc.	-	Beatrice, Ala. Winnfield, La.
Standard Wood Preservers of Shreveport, Inc.	-	Shreveport, La.
Swift Lumber Co., Inc.	-	Atmore, Ala.
John C. Taylor Lumber Sales, Inc.	-	Sheridan, Ore.
Texas Electric Cooperative, Inc.	-	Jasper, Texas

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July 1984

zz - Poles

Pressure Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
Texas Tie & Timber Co. (W. J. Smith Wood Preserving Co.)	-	Denison, Texas
Tri-State Pole & Piling, Inc.	-	Ducedale, MS
Union Timber Corp.	-	Homerville, Ga.
Weekly Lumber Co.	- -	Rockledge, Fla. Tampa, Fla.
Western Tar Products Corp.	-	Terre Haute, Ind.
Western Wood Preservin Co.	-	Sumner, Wash.
Wheeler Div., St. Regis Paper Company	Whitewood, S. D. Cass Lake, Minn.	Whitewood, S. D. Cass Lake, Minn.
Whitewood Post & Pole Co.	Whitewood, S. D.	Whitewood, S. D.
Wood Treating, Inc.	-	Picayune, Miss.
Wyckoff Company	- -	W. Seattle, Wash. Bainbridge Island, Wash.
Weyerhaeuser Company	-	DeQueen, Ark.

zz - Poles

Thermal (Non-Pressure) Treatment

	<u>Insured Warranted</u>	<u>Independently Inspected</u>
J. H. Baxter & Co.	-	Arlington, Wash.
Bell Lumber & Pole Co.	-	Minneapolis, Minn.
B. J. Carney Industries		Sandpoint, Idaho
Cascade Pole Co.	-	Tacoma, Wash.
Cedar Service, Inc. (R. G. Haley and Co., Inc.)	-	Bemidji, Minn.
Idaho Pole Company	-	Bozeman, Mont.
Kalispell Pole & Timber Co.	-	Kalispell, Mont.
MacGillis and Gibbs Co.	-	Minneapolis, Minn.
L. D. McFarland Co.	Eugene, Ore. Sandpoint, Idaho	Eugene, Ore. Sandpoint, Idaho
Oeser Cedar Co.	-	Bellingham, Wash.
Page & Hill Forest Products	-	Big Falls, Minn.
Poles Incorporated	-	Newport, Wash.



## PART II

### Underground Distribution Equipment

The realm of underground distribution has made quite significant advances in the past few years. Due to these advances and the increasing feasibility of underground rural distribution, most REA borrowers have placed some distribution equipment underground, are presently planning to, or are anticipating doing so in the future. If borrowers are to obtain reliable and economical underground systems, approved standards for construction and equipment must be observed.

Underground equipment considered suitable is being included in the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers." Specifications have been written and are available on much of this equipment. It must be realized that very little operating experience is available on this type equipment. Therefore, much of the underground equipment will be listed as "Conditional" until such experience is obtained that will warrant removing the "Conditional" listing. Listing of an item as "Conditional" does not mean that the item is inferior. Conditional means that service experience is desired so the item can be properly evaluated and demonstrates satisfactory performance before consideration for final acceptance.

Any comments or suggestions regarding the use or operation of the listed underground equipment will be welcome.

U ae  
July 1984

U ae - Surge Arresters, Distribution  
for Underground System Pole Risers  
(Lightning Arresters)

<u>Manufacturer</u>	<u>Arrester Class</u>	<u>Arrester Type</u>	<u>Ratings - kV</u>
General Electric	Distribution, heavy duty	Alugard	9, 10, 18
Joslyn	Distribution, normal duty	Q	9/10, 18
	Distribution, heavy duty	J	9/10, 18
	Intermediate*	2RS	9/10, 18
Kearney	Distribution, heavy duty	Unigap	9, 10, 18
McGraw-Edison	Distribution, normal duty	ES	9/10, 18
	Distribution, heavy duty	EL	9, 10, 18
	Intermediate	RP2	9/10, 18
Ohio Brass	Distribution, normal duty	DA-III	9/10, 18
	Distribution, heavy duty	DA-I V	9, 10, 18
	Intermediate	GP	9, 10, 18
Westinghouse	Distribution, normal duty	GLV	9, 10
	Distribution, normal duty	LVBB	18

\*Has intermediate class arrester characteristics but does not have intermediate class venting capability.

NOTE: The arresters listed on this page may be used singly or in parallel, but must be applied in accordance with paragraph VI.A., in REA Bulletin 61-3, "Underground Rural Distribution." Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with this bulletin.



July 1984

U ae - Arresters, Surge  
(For underground system pole risers or pad-  
mounted equipment)

(Shielded for Underground System Pad-Mounted Equipment)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>McGraw-Edison</u>		
Metal oxide, AMOV1 U.D. 10, 18 kV	1223 11/19/81	To obtain experience.
<u>RTE</u>		
Metal Oxide Elbow Arrester M.O.V.E. 9, 18 kV	1185 4/24/81	To obtain experience.

(For Underground System Pole Risers)

<u>General Electric</u>		
Metal Oxide, Tranquell U.D. 9, 10, 18	1185 4/24/80	To obtain experience.
Metal Oxide, Tranquell Intermediate Class 9, 10, 18 kV	1197 10/9/90 1276 3/15/84	To obtain experience.
<u>Joslyn</u>		
Metal Oxide, Type ZJ U.D. 9, 10, 18 kV	1266 9/22/83	To obtain experience.
Metal Oxide, Type ZR Intermediate Class* 9, 10, 18 kV	1266 9/22/83	To obtain experience.

<u>McGraw-Edison</u>		
Metal Oxide, AVZ 1B 9/10, 18 kV	1223 11/9/81	To obtain experience.

<u>Ohio Brass</u>		
Metal Oxide, DynaVar VR UD 9, 10, 18 kV	1236 6/10/82	To obtain experience.
Metal Oxide, DynaVar Intermediate Class 9, 10, 18 kV		

\*Has intermediate class arrester characteristics but does not have  
intermediate class venting capability.

U an-1.1  
July 1984

U an - Transformers, distribution  
pad-mounted, dead-front

(For underground application)

Applicable Specifications: "REA Specifications for Pad-Mounted  
Transformers," U-5.

<u>Manufacturer</u>	<u>Single Phase</u>	<u>Three-Phase</u>
Central Moloney (2,4)	"REA-LP" 25-167 kVA	
Dowzer (3,4)	"METRI-PAD" 25-167 kVA	"PM3W-R" 75-500 kVA
ERMCO (1) (4,6) (2,4)	"Trimline" 10-50 kVA "Low-Profile" 10-50 kVA "Low-Profile" 75 kVA	
General Electric (2,4)	"Mini-Pad III - REA" 10-167 kVA	"Compad II - REA" 75-2500 kVA
Howard (2,4)	"Hi Pad REA" 10-167 kVA	"Hi Pad 3 REA" 45-2500 kVA
Kuhlman (2,4)	"Lo-Pak ALR" 25-167 kVA	
McGraw-Edison (2,4)	Series 20/20 REA 25-167 kVA	"REA Pad-Mount" 75-2500 kVA
NECO/Hammond (2)	HMM-R, 10-50 kVA SP-R, 75-167 kVA	TP-R, 45-1000 kVA
Pauwels-Chance (2)	"Turf Hugger-R" 10-100-kVA	"Turf Hugger-R" 45-500 kVA
H. K. Porter (2,4) (Delta-Star)	"Low Profile U 5-R" 25-167 kVA	"Porter U5-R3" 225-2500 kVA
RTE (2,4)	"REA Shrubline" 15-167 kVA	"REA Terra-Tran" 45-2500 kVA
United (Ky, AEC) (2,4)	"Pad-Mount" 15-75 kVA	

- (1) 7.2/12.5 and 7.6/13.2 kV
- (2) 7.2/12.5, 7.6/13.2 and 14.4/24.9 kV
- (3) 7.2/12.5 and 7.6/13.2 kV (conditional listing for 14.4/24.9 kV)
- (4) Dual voltage - same as for 14.4/24.9 kV, single phase
- (5) Three-phase listing applies to 7.2/12.5 and 7.6/13.2 kV only
- (6) 14.4/24.9 kV

U an - Transformers, Distribution,  
Pad-mounted, Dead-Front

(For Underground Application)

Applicable Specifications: REA Specifications for Pad-Mounted  
Transformers - U-5

<u>Manufacturer</u>	<u>Single Phase</u>	<u>Three Phase</u>
VanTran (3,4)	"Mini Pad U5" 5-167 kVA	"VanPad III-U5" 30-2500 kVA
Wagner (Turbodyne)(2,4)	"Turflin II-R" 25-167 kVA	
Westinghouse (2,4)	"Mini-Pak U-5" 25-167 kVA	CTP-U5, 75-500 kVA "Plazapad - U5" 750-2500 kVA

- (1) 7.2/12.5 and 7.6/13.2 kV
- (2) 7.2/12.5, 7.6/13.2 and 14.4/24.9 kV
- (3) 7.2/12.5 and 7.6/13.2 kV (conditional listing for 14.4/24.9 kV)
- (4) Dual voltage - same as for 14.4/24.9 kV, single phase
- (5) Three-phase listing applies to 7.2/12.5 and 7.6/13.2 kV only

U an-2  
July 1984

U an - Transformers, distribution  
pad-mounted, dead-front

(For unit residential underground application, 7.2/12.5  
and 7.6/13.2 kV, 5-25 kVA single phase only)

<u>Manufacturer</u>	<u>Type</u>
Central Moloney	"REA-Mini-LP" 10-25 kVA
ERMCO	"REA-Micro Pad" 10-25 kVA
General Electric	"Micro-Mini-Pad" 10-25 kVA
Howard	"Spacesaver Pad" 10-25 kVA
McGraw-Edison	"Series 10/15 REA" 10-25 kVA
NECO/Hammond	"Little NECO-R" 10-25 kVA
Pauwels-Chance	"Turf Hugger II" 10-25 kVA
RTE	"Ranch Runner" 10-25 kVA
VanTran	"Mite'E 'Mini" 5-25 kVA
Westinghouse	"Micro-Pak U-5" 10-25 kVA

Conditional List

U an(1)

July 1984

U an - Transformers, distribution  
pad-mounted, dead-front

(For underground application)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
Hevi-Duty		
Three phase	970	1. To obtain experience.
SBI-DF 750-2500 kVA	7/1/71	
7.2/12.5 & 7.6/13.2 kV	1153	2. Test reports on 750
	12/21/78	and 2000 kVA to be submitted as available.

## Conditional List

U an(2)

July 1984

U an - Transformers, distribution, submersible

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Central Moloney</u> Type URD, 25-100 kVA	843 6/16/66	To obtain experience.
<u>General Electric</u> Type RST, 25-100 kVA	847 8/11/66	To obtain experience.
<u>Howard</u> 25-100 kVA	1139 5/18/78	To obtain experience
<u>Kuhlman</u> 25-100 kVA	901 9/12/68	To obtain experience.
<u>McGraw-Edison</u> 25-100 kVA	857 1/12/67	To obtain experience.
<u>RTE</u> "VaulTran Type H" 15-100 kVA	870 6/29/67	To obtain experience.
<u>Westinghouse</u> Type SPB, 25-100 kVA	843 6/16/66	To obtain experience.

July 1984

U an - Transformers, Distribution,  
Direct Burial\*

(5-25 kVA only)

Conditions: To obtain experience.

ManufacturerMetallic Tank  
(Cathodic protection  
required)Nonmetallic Tank  
(Cathodic protection not  
used)Central Moloney  
(Meeting 993, 6/8/72)"Trenchmite" 15-25 kVA  
Radial Feed or Loop Feed  
(same end) onlySargent-Tyee  
(Meeting 1016, 5/10/73)"No-Korrod"  
10-25 kVA

\*Direct burial transformers are at an early stage in their development. Large numbers of direct burial transformers should not be purchased from any one manufacturer by any one borrower in any one year. Carefull location records should be kept.



U ax  
July 1984

U ax - Cutout and Arrester, Combination  
for Underground System Pole Risers

Nominal System Voltage	For 12.5Y/ 7.2 kV	For 13.2Y/ 7.6 kV	For 24.9Y/ 14.4 kV	
Cutout Maximum Voltage Rating	7.8 kV	15 kV	15 kV	27 kV
	1Ø	3Ø	1Ø and 3Ø	1Ø and 3Ø
Application	Risers	Risers	Risers	Risers
Cutout Current Rating	100 amps	100 amps	100 amps	100 amps

<u>Manufacturer</u>	<u>Catalog Numbers</u>			
Chance	C71D-112PB Series	C71D-112PB Series	C71D-112PB Series	C71F-211PB Series
General Electric	9F80	9F80	9F80	9F80
Joslyn	J9237-P2	J9237-P2/R	J9237-P2-R	J9267-D2
McGraw-Edison	AFS300B Series	AFS300C Series	AFS300C Series	AFS301D Series
Southern States	CA Series	CA Series	CA Series	CA Series
Westinghouse	7.8LBU-II/ 10 LV	15LBU-II/ 10 LV	15LBU-II/ 10 LV	24.9LBU-II/ 18 LV

NOTE: The units listed on this page may be used with single arresters or arresters in parallel, but must be applied in accordance with paragraph VI.A. in REA Bulletin 61-3, "Underground Rural Distribution." Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with this bulletin.

Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

U ax - Cutout and Arrester

Combination for Underground System Pole Risers

Nominal System Voltage	For 12.5Y/7.2 kV	For 13.2Y/7.6 kV	For 24.9Y/14.4 kV	Conditions
Cutout Maximum Voltage Rating	7.8 kV	15 kV	27 kV	
Application	1Ø Risers	3Ø Risers	1Ø and 3Ø Risers	
Cutout Current Rating	100 amps	100 amps	100 amps	

Metal Oxide Type Arresters

Manufacturer

Catalog Numbers

Joslyn (Distribution)  
Meeting No. 1266(9/22/83)

J9237-ZJ2      J9237-ZJ2/R      J9237-ZJ2      To obtain experience.

Note 1: Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with REA Bulletin 61-3, "Underground Rural Distribution."

Note 2: Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

Conditional List  
U ax(1)  
July 1984

U c g  
July 1984

U c g - Switch, air, three-pole, group-operated  
for pole-mounted cable risers  
(Factory Preassembled)

<u>Manufacturer</u>	<u>Mounting</u>	<u>Vertical Break Type      kV</u>	<u>Side Break Type      kV</u>
Chance	Vertical		D7(L)15-27
	Horizontal		D7(L)15-27
S & C	Vertical		Al d u t i (L) 15-25
	Horizontal		Al d u t i (L) 15-25
Westinghouse	Vertical	LB3-VR(L)15	

(L) Means gas or solid material full-load interrupters are accepted and available.

NOTE: Switches with factory-assembled crossarm type bases must have nonconducting crossarm type bases, nonconducting braces, and insulated interphase and control rods.

U fw  
July 1984

U fw - Secondary Tap Connector

Manufacturer

Type or Catalog No.

Raychem

Compression Connectors

CTE-300-00

CTE-400-00

CTE-500-00

Standard Split Bolt

CTE-300-00

CTE-400-00

U fz-1  
July 1984

U fz - Transformer Connector Block, Insulated

Multiple Cable Connectors

Watertight - For use in all locations.

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Utilco	Set Screw	PTF-SS, Watertight Insulated transformer Connector block Stud Mole with sealing sleeve
Burndy	Lug	
<u>Non-Watertight - For use in above grade locations only</u>		
Alcoa	Lug	Interchange 1 ABBD Series (Disconnectable) Use with A9 insulating boots
Alcon	Set Screw	VBTT Series with double sealing sleeve
Electrical Spec. Prod.	Lug Lug	Type SU (Permanent) Types SUR and RDSR (Removable) (With Types LA and A1 lugs and sleeve kits)
	Set Screw	Type UPS-I (Permanent) Type UPM-I (Disconnectable)
Fargo	Bolted Set Screw	GUC Series GUS-200S Series
Homac	Lug Lug	DF Series FTU 125 Series (Disconnectable) with flood seal sleeve kit
	Set Screw	LRT Series
ITT	Lug Set Screw Set Screw	SCU, with lugs and sleeves TSB-J58C (Permanent) TSB-D58C (Disconnectable)
Penn Union	Lug Lug	Type DBAT-LH (Disconnectable) Use with Series DBTB, DBTBF and DBTH lug and sleeves kits
Reliable	Set Screw	15912-REA (Disconnectable)
RTE	Set Screw Set Screw	Uni-Joint (Disconnectable) Uni-Joint (Permanent)
Utilco	Set Screw Set Screw	PTF-IN (Permanent) PTF-CJU (Disconnectable)

NOTE: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

U fz - Transformer Connector Block, Insulated  
Single Cable Connectors

Non-Watertight - For use in above grade locations only

Manufacturer

Catalog Number

Electrical Spec. Prod

Type SM transformer bushing  
connector kit. (Stud to  
aluminum cables through  
350 kcmil)

NOTE: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

U gc  
July 1984

U gc - Shield, cable riser

<u>Manufacturer</u>	<u>Dia. (Inches)</u>	<u>Length (Feet)</u>
<u>Galvanized Steel</u>		
Chance	2 - 3 - 3-1/2	5 - 9
*Electrical Materials	2 - 3 - 4 - 5	5
*#Fargo	2 - 3 - 3-3/4 - 5	5 - 8 - 10
*Joslyn	2 - 3 - 3-1/2	5 - 8
*McGraw-Edison	2 - 3 - 4	3 - 5 - 10
Midland-Ross (Kindorf Snapduct)	2 - 3 - 5 (14 ga. galv. steel)	2 - 5 - 10
#Utility Products Co.	3/4 - 1 - 2 - 3 - 3-3/4	3 - 5 - 8
<u>Plastic and Fiberglass</u>		
*Electrical Materials (plastic)	2 - 3 - 4 - 5	5 - 10
*Hercules (Haskon) (plastic) (Power Mold I, II, III)	2 - 3 - 4 - 5	5 - 9 - 10
*Joslyn (plastic)	2 - 3 - 4 - 5	5 - 10
*Nordic (fiberglass)	2 - 3 - 5	5 - 10
*Quazite Corp. (Composolite - plastic)	2 - 3 - 4 - 5	10

(Order by size and length)

#All sizes available with galvanized finish or painted-over galvanizing.

\*All sizes available with back plate.



U gk - Terminations, Indoor

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Voltage Class</u>	<u>Catalog No.</u>
Joslyn	15 kV	J9275

Conditional List  
U gk(1.1)  
July 1984

U gk - Terminations, outdoor  
(with mounting hardware)\*

(when ordering, specify conductor size, type, whether  
copper or aluminum, insulator diameter, and type of  
mounting desired)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u>		
Style 16-THG (15 and 25 kV)	921(6/26/69)	To obtain experience.
Style 35-MT (35 kV)	945(6/11/70)	
	1098(9/23/76)	
<u>General Electric</u>		
Termi-Matic, Type G	938(3/5/70)	To obtain experience.
(15, 25 and 35 kV)	914(3/20/69)	
	1083(2/5/76)	
<u>Joslyn</u>		
"Easy-On II"	1111	To obtain experience.
(15, 25 and 35 kV)	3/31/77	
<u>3M</u>		
5900 Series	966	To obtain experience.
15 kV (4/0 AWG and larger)	5/6/71	
25 kV (#2 AWG thru 750 kcmil)	969	
"Quick-Term" 5800 Series	6/17/71	
bracket mounted,	1054	
15 kV (#2 AWG thru 3/0 AWG)	11/27/74	
MT Series		
15 kV (4/0 AWG and larger)	1083	
25 kV, 35 kV	2/5/76	
"Quick-Term II" Series		
(15, 25 and 35 kV)	1238(7/15/82)	
<u>ITT Blackburn</u>		
Type MP (15, 25 and	1043(6/13/74)	To obtain experience.
35 kV)	1166(6/21/79)	

\*Mounting hardware is used to attach termination to mounting bracket (U hd or U hj).

U gk - Terminations, Outdoor  
(With Mounting Hardware)\*

(When ordering specify conductor size, type, whether  
copper or aluminum, insulation diameter, and type  
of mounting desired)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Raychem</u> Thermofit HVT (15, 25 and 35 kV)	1054 11/27/74	To obtain experience.
<u>Bishop</u> SWO Kit (15, 25 & 35 kV)	1109 3/3/77	To obtain experience.
<u>G &amp; W</u> "Eliminator" 15 kV, E 25 kV, E 35 kV, E	1150(11/2/78)  1166 6/21/79 1251(1/20/83)	To obtain experience.
<u>RTE</u> Fasterm Series (15 & 25 kV)	1162 4/26/79	To obtain experience.
<u>Sigmaform</u> Q-Cap Series STK (15 & 25 kV)	1212 5/21/81	To obtain experience.

\*Mounting hardware is used to attach termination to mounting bracket  
(U hd or U hj).

## Conditional List

U gk(2)

July 1984

## U gk - Terminations, Indoor

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u> Style 35-MSC (15, 25 & 35 kV)	945(6/11/70) 1116(6/9/77)	To obtain experience.
<u>General Electric</u> Termi-Matic, Type A or G (15, 25 & 35 kV)	914(3/20/69) 1083(2/5/76)	To obtain experience.
<u>ITT Blackburn</u> Type SKD Stress Cone (15, 25 & 35 kV)	1043 6/13/74	To obtain experience.
<u>Raychem</u> Thermofit HVT (15, 25 & 35 kV)	1054 11/27/74	To obtain experience.
<u>3M</u> MT Series (15, 25 & 35 kV)	1054(11/27/74) 1083(2/5/76)	To obtain experience.
<u>Bishop</u> Stress-Wrap (15, 25 & 35 kV)	1109 3/3/77	To obtain experience.
<u>RTE</u> Fasterm Stress Cone (15 & 25 kV)	1162 4/26/79	To obtain experience.
<u>Sigmaform</u> Q-Cap Series STK-I (15 & 25 kV)	1212 5/21/81	To obtain experience.

## U gn - Enclosures, equipment

Applicable Specifications: "REA Specifications for Equipment Enclosures,"  
U-4

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Continental Columbus</u>		
E/L100	969	To obtain experience.
(For use with dead-front	6/17/71	
pole-type transformers - see	1080	
Item an)	12/23/75	
<u>Durham</u>		
Series 4242 (dead-front)	966	To obtain experience.
Series 5454 (dead-front)	5/6/71	
Series 3452 (dead-front)	1078(11/26/75)	
<u>Electrical Equipment</u>		
TH1-DF Series (dead-front)	975(9/16/71)	To obtain experience.
<u>Inter-Alloys</u>		
3636-DF-SP	1052	To obtain experience.
4242-DF-SP	10/31/74	
5454-DF-SP	1133	
6666-DF-SP	2/16/78	
7272-DF-SP		
<u>Malton Electric</u>		
1-Phase Single Unit	978	To obtain experience.
(dead-front)	10/28/71	
<u>McGraw-Edison</u>		
EH12E DF-REA	994	To obtain experience.
EH13E DF-REA	6/29/72	
EH16E DF-REA	1119	
EH17E DF-REA	7/28/77	
EH18E DF-REA		
EH22E DF-REA		
<u>Western Power Products</u>		
FG-DF1 (dead-front)	966	To obtain experience.
FG-DF3 (dead-front)	5/6/71	

NOTE: The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.

U gn - Enclosures, equipment

Sectionalizing Enclosures

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Carolina Dielectrics</u> Model 0501	994 6/29/72	To obtain experience.
<u>Continental Columbus</u> CW200 Series CW300 Series	969(6/17/71) & 987(3/16/72)	To obtain experience.
<u>Durham</u> Mini-Section Low Profile I, Low Profile III and Tri- Section Series	1077 11/13/75	To obtain experience.
<u>Electrical Equipment</u> LPT-228-P LPT-249-F 3Ø LPT-266-P 3Ø	1103 12/2/76	To obtain experience.
<u>Nordic</u> ND series	A1255 3/24/83	To obtain experience.
<u>Western Power Products</u> Model 24-1 Model 34-2 Model SPM-320 1Ø Model SPM-540 3Ø	966 5/6/71 1136 4/6/78 1209(4/2/81)	To obtain experience.
<u>Willow</u> WT-130 WT-248 WT-364 *WT-130 PM *WT-248 PM **WT-248 XM **WT-364 XM	1038 4/4/74	To obtain experience.

\*For pole mounting.

\*\*For crossarm mounting.

NOTE: The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.



U gn - Enclosures, equipment

Sectionalizing Enclosures

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Malton Electric</u>		
MEJ Series	1045(7/11/74)	To obtain experience.
ME Series	1108(2/17/77)	
	1130(1/5/78)	
MEH Series	1167(7/12/79)	
<u>Vertex Plastics</u>		
1826B, 1 $\phi$	1045	To obtain experience.
1826C, 1 $\phi$	7/11/74	
1881, 3 $\phi$	1110(3/17/77)	
<u>Inter-Alloys</u>		
15 kV and 25 kV	1051(10/10/74)	To obtain experience.
Primary terminal pedestals	1133	
PP Series, 1 $\phi$ and 3 $\phi$	2/16/78	
*PP-PM Series, 1 $\phi$ and 3 $\phi$		
<u>Galva-Closure Products</u>		
Series AG	1132	To obtain experience.
Series BB	2/2/78	
<u>Hoffman</u>		
U-J Series junction enclosures	1135 3/23/78	To obtain experience.
U-JGS Series ground sleeves	1147 9/14/78	
<u>Utility Products Co.</u>		
PPB (15 & 25 kV)	1162(4/26/79)	To obtain experience.
<u>Wheelock and Son</u>		
Single phase	1252	To obtain experience.
Three phase	2/3/83	

\*For pole mounting

\*\*For crossarm mounting

\*\*\*Available with surge arresters



## Conditional List

U gn(4)

July 1984

## U gn - Enclosures, Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Sectionalizing Enclosures</u>		
<u>Ranger</u> TE-501, TE-503, J-34-TB	1165(6/7/79)	To obtain experience.
<u>Kearney</u> CTC 653-0033	1177(11/29/79)	To obtain experience.
<u>RTE</u> Secter Series 400L (1Ø) Secter Series 450L (3Ø)	1186(5/8/80)	To obtain experience.
<u>Highline</u> HL80P-15(15 kV) HL81P-15(15 kV) HL90P (15 kV)	1204 1/22/81	To obtain experience.
<u>Burial Type</u>		
<u>Sonoco Products Co.</u> 36" Duropipe (fiber) transformer vault. Available with stainless steel clevises, angle or tab ring, protective shields and cast iron or welded steel grates.	836 3/10/66	To obtain experience.

U go - Fault Indicator  
(For Construction Unit UM6-4)

<u>Manufacturer</u>	<u>Type</u>
Edison Control Corporation	Series EC100 (single phase) Series EC300 (three phase) (Available with mounting kit KT5002)
Fisher Pierce	Series 1514 (To be used on single-phase circuits only)
McGraw-Edison	Linam
RTE	TPR, LV, MR

U gp - Connector Blocks and Splices, Secondary

Watertight - For Use In All Locations

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
Alcoa	Lug	Interchange-I ABB Series Use with A-9 insulating boots
Alcon	Set Screw	VPB Series
AMP	Compression	600 Volts secondary UG Distribution 4-way and 6-way bus system
Blackburn	Lug	Series UP (with lugs and sleeves)
	Set Screw	Series UB (1000 amp bus with sleeves)
Burndy	Lug	URD Mole
Electrical Spec. Prod.	Lug	Type UC (8 AWG - 500 kcmil) (with LA lug and sleeve)
	Set Screw	Type UB (with sleeve) Splice Type ACL-HSH (6 AWG - 500 kcmil)
Fargo	Set Screw	GU-500 Series
Homac	Lug	FS-95 Series with flood seal sleeve kit (8 AWG - 350 kcmil)
	Lug	FS-125 Series with flood seal sleeve kit (350 - 500 kcmil)
	Set Screw	SHC Series
Kearney	Compression	HCR
	Compression	HAR
Penn Union	Lug	DBA Series with DBTB, DBTBF and DBTH Series lug and sleeve kits
Reliable	Set Screw	15903-15908, 15910 with sleeve kit (4 AWG - 350 kcmil) 15911 with sleeve kit (500 - 750 kcmil)
RTE	Compression	Aqua Guard Splice Kit
Utilco	Set Screw	Safety Sub Splice - USPA-350SS

U gp - Connector Blocks and Splices, Secondary

Non-Watertight - For Use In Above-Grade Pedestals Only

<u>Manufacturer</u>	<u>Connection Type</u>	<u>Catalog Number</u>
ITT Blackburn	Set Screw	Type PSB-C
Electrical Spec. Prod.	Set Screw	UP-B Series
Fargo	Set Screw	GUS-200 Series
Homac	Set Screw	CLR-350 Series
Utilco	Set Screw	PED-350-IN Series

U gq  
July 1984

U gq - Boot or sleeve, insulated\*

Manufacturer

ITT Blackburn

Catalog Number

MPC9  
MPC15

Electrical Materials

100-B (for pad-mounted  
transformer spade  
terminals)

\*Use restricted to 120/208 volt 500 kVA transformers and larger not  
equipped with threaded studs.

U gu - Pedestal, Power

Refer to Construction Drawings UK5 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power Pedestals," U-6

<u>Manufacturer</u>	<u>Inside Dimensions Inches</u>	<u>Height Inches</u>	<u>Catalog No.</u>
Fargo	8 x 8	38	UP-1520C
	8 x 8	44	UP-1620C
	8 x 12	27	UP-1720C
	8 x 12	44	UP-1820C
	10 x 10	27	UP-2320C
	10 x 10	38	UP-2220C
	10 x 10	43	UP-2420C
	10 x 16	37	UP-2520C
Inter-Alloys	7.75 x 11	24	C-24128-PH
	7.75 x 15	24	C-24168-PH
	7.75 x 11.5	24	**PM-24128-PH
	7.75 x 15.5	24	**PM-24168-PH
Nordic	8 x 8	44	PR-50, PR-55
	9 x 14	30	PR-149 (stake)
			PR-150 (stakeless)
Utility Products	8 x 8	38	UP 8HLP
	8 x 8	46	UP 8HP
	10½ x 10½	26	UP 10HLP
	16½ x 10½	36	UP 1016HLP
	10½ x 10½	42	UP 10HP
Vertex	8 x 14	30	SP 814
Western Power	8 x 8	30	*SP-8, DF-3 (dead-front)
	9 x 9	30	*SPMC-9-DF3
	9 x 9	30	SPM-90, DF-3 (stakeless)
	9 x 14	30	*SPMC-14-DF3
	9 x 14	30	SPM-140, DF-3 (stakeless)

\*Furnished with stake.

\*\*Pole mounted

Conditional List

U gu(1)  
July 1984

U gu - Power pedestal  
Refer to Drawings UK6 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power  
Pedestals," U-6

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>ITT Blackburn</u>		
Molded polyethylene with galvanized steel cover and ground lug. Catalog No. SDR-2PG	991 5/11/72	To obtain experience
<u>Pen-Cell</u>		
Molded polyethylene with galvanized steel or plastic cover Catalog No. PE-20-REA Polycarbonate Box cover Catalog No. AG-20-6-REA	983 1/20/72 1156 2/1/79 1191 7/24/80	To obtain experience
<u>Burndy</u>		
Molded polyethylene with galvanized steel cover. Catalog No. URD20G23	997 7/27/72	To obtain experience
<u>Fargo</u>		
HDPE, B-100R Series ABS, B-200R Series	1140(6/1/78) 1166(6/21/79)	To obtain experience
<u>Carson</u>		
Molded polyethylene with plastic cover Catalog Nos. 1324-12B and 1730-12B	1109 3/3/77	To obtain experience
<u>Associated Plastics</u>		
Molded polyethylene with galvanized steel or plastic cover Catalog Nos. 1730-1, 3; 1324-1, 3	1113 4/28/77	To obtain experience



July 1984

U gu - Power Pedestal  
Refer to Drawings UK6 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power  
Pedestals," U-6

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Dexol</u> HDPE, DX-101 DX-102 ABS, DX-101HD DX-102HD	1140 6/1/78	To obtain experience.
<u>Highline</u> HL50AE HL51	1204 1/22/81	To obtain experience.

U gv  
July 1984

U gv - Stake, Power Pedestal  
Refer to Construction Drawing UK5

<u>Manufacturer</u>	<u>Length Inches</u>	<u>Catalog No.</u>	
		<u>For Power Pedestal Only</u>	<u>For Joint Pedestal</u>
Fargo	42-60-72-78	UP-530S Series	UP-530J Series
Nordic	48-60-72	PM Series	
Utility Prod.	72-78-84	DM Series	DM Series

U hb - Cable Accessories  
(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)  
200 Ampere Continuous Current Rating

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>ITT Blackburn</u>		
15 kV, used with loadbreak connectors		To obtain experience.
Type LB2BA bushing plug	1012 (3/15/73)	
Type ABOC insulating cap		
Type JLB2BA bushing plug*	1042 (5/30/74)	
25 kV, used with non- loadbreak connectors		
Type LB2CA bushing plug	1110 (3/17/77)	
Type ABOCC insulating cap	1193(8/21/80)	
<u>Elastimold (ESNA)</u>		
15 kV, used with loadbreak connectors		To obtain experience.
Style 1601-CL cable lead	921 (6/26/69)	
Style 1602A3R feedthru insert*	1171	
Style 1601-A3R bushing plug*	9/6/79	
Style 160-DR insulating cap	924 (8/7/69)	
Style 160LCIBA3R	1174 (10/18/79)	
15 kV, used with non-loadbreak connectors		
Style 1501-A1 bushing plug	921	
Style 150-DP deadend plug	6/26/69	
Style 150-DR deadend receptacle	842	
25 kV, used with loadbreak connectors		
Style 2701-A2 bushing plug*	6/2/66	
25 kV, used with non-loadbreak connectors		
Style 2701-A2 bushing plug*	1232	
Style K-1501-A1 bushing plug	4/8/82	
Style K-150-DR deadend receptacle	921	
25 kV used with loadbreak connectors		
Style K-1501-A1 bushing plug	6/26/69	
Style K-150-DR deadend receptacle	945 (6/11/70)	
25 kV used with loadbreak connectors	1199	
Style 270-DR deadend receptacle	11/6/80	

\*Note: Asterisk indicates single or three phase. Other bushing plugs for use with loadbreak connectors are single phase only.

## Conditional List

U hb(1.1)

July 1984

## U hb - Cable Accessories

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>General Electric</u>		To obtain experience.
15 kV, used with		
loadbreak connectors		
Switch module 9U02AAA001	930(10/30/69)	
Switch module 9U02AAB001*	1133(2/16/78)	
Basic connector module		
9U05 series	930(10/30/69)	
Insulating cap 9U01AEW400		
Feed-through insert 9U04AEB001	1214(6/18/81)	
25 kV, used with		
loadbreak connector		
Switch module 9U02BAA001	1016(5/10/73)	
Switch module 9U02BAB001*	1133(2/16/78)	
Insulating cap 9U01BEW500	1016(5/10/73)	
Feed-through insert 9U04BEB001	1214(6/18/81)	
<u>RTE</u>		To obtain experience.
15 kV, used with		
loadbreak connectors		
No. 2603711A12 protective cap	1033(1/17/74)	
No. 2604797B01 bushing well	1126(11/3/77)	
insert*		
No. 2625194A01 two-way bushing		
well insert*		
No. 2604231B01 bushing well plug		
25 kV, used with		
loadbreak connectors		
No. 2606591A02 protective cap	1033(1/17/74)	
No. 2604982B01M bushing well	1148(9/28/78)	
insert*		
No. 2604975B01M two-way bushing		
well insert*		
35 kV, used with		
loadbreak connectors		
No. 2606630A01 protective cap	1048(8/22/74)	

\*NOTE: Asterisk indicates single or three phase. Other bushing plugs for use  
with loadbreak connectors are single phase only.

U hb - Cable Accessories  
(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Burndy</u> 15 kV, used with loadbreak connectors Type LBIC152 Insulating Cap	1227 1/21/82	To obtain experience.
25 kV, used with loadbreak connectors Type LBIC252 Insulating Cap		

## Conditional List

U hb(2)

July 1984

## U hb - Cable Accessories

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)600 Ampere Continuous Current Rating

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u>		
15 kV, used with non-loadbreak connectors 600, 650 Series	1016 5/10/73	To obtain experience
25 kV, used with non-loadbreak connectors K600, K650 Series		
35 kV, used with non-loadbreak connectors 750LR Series	1064 5/1/75	
<u>RTE</u>		
15 kV, VBT Tee connector No. 2604360B Series	1126 11/3/77	To obtain experience.
15 kV, Protective cap No. 2625041A01		
<u>ITT Blackburn</u>		
15 kV, used with non-loadbreak connectors Types 6B and 65B	1131 1/19/78	To obtain experience
25 kV, used with non-loadbreak connectors Types 6C and 65C		
<u>Burndy</u>		
15 kV, used with non-loadbreak connectors PES86/PSS86	1197 10/9/80	To obtain experience
25 kV, used with non-loadbreak connectors PES86--S/PSS86--S		

U hb - Cable Accessories

(When ordering specify insulation diameter)

Concentric Neutral Clamps (Bonding)

<u>Manufacturer</u>	Meeting No. and Date	<u>Conditions</u>
<u>Reliable</u> Concentric neutral bonding clamp (Nos. 2329 & 2330)	1037 3/21/74	1. To obtain experience.  2. Only for bonding of anodes or other metals to the neutrals of <u>existing</u> cable installations.  3. Not to be used to connect neutral to grounding electrodes.
<u>Harco</u> URD cable clamp	1114 5/12/77	Same as above



U hc  
July 1984

U hc - Cable Supports  
15 and 25 kV

<u>Manufacturer</u>	<u>Catalog Number</u>	<u>Grip Dia. Range (inches)</u>
Kellems	022-16-011	0.81 to 0.94
	022-16-012	0.87 to 1.00
	022-16-013	0.94 to 1.06
	022-16-014	1.00 to 1.18
	022-16-015	1.06 to 1.25
	022-01-018	1.25 to 1.50
Lewis	A-U-SW-18	0.75 to 1.25
	A-U-SW-1.12	1.12 to 1.62
Economy Cable Grip	SPJ087-U	0.87 to 1.00
	SPJ100-U	1.00 to 1.12
	SPJ113-U	1.12 to 1.25
	SPC125-S-U	1.25 to 1.50
Fargo	GJ-854	0.718 to 0.919
	GJ-855	0.920 to 1.12
	GJ-856	1.12 to 1.50
Aluma-Form	CS-800 Series	0.75 to 2.0
Woodhead	35032 (SC075-U)	0.75 to 0.99
	35033 (SC100-U)	1.00 to 1.24
	35034 (SC125-U)	1.25 to 1.50
Slater	FCSD 14	0.82 to 0.95
	FCSD 15	0.88 to 1.00
	FCSD 16	0.95 to 1.06
	FCSD 17	1.01 to 1.19
	FCSD 18	1.07 to 1.26
	FC125-U	1.25 to 1.50

U hd  
July 1984

U hd - Brackets, pothead mounting, and  
Brackets, combination pothead and  
arrester mounting

Manufacturer

Single Phase

Three Phase

Aluma-Form

TB-EMB-1-2PA

TB-EMB-1-6 PA

Conditional List  
U he(1)  
July 1984

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
	<u>7.2/12.5 kV</u>	
<u>Durham</u>		
Model FTSP-CL, single-phase pad-mounted, 1 thru 4 fused taps	1020 7/5/73	To obtain experience.
Model FTSP-CL3, three-phase pad-mounted, 1 and 2 fused taps	1077 11/13/75	To obtain experience.
<u>Electrical Equipment</u>		
FTDF-P Series, single and three-phase, one and two fused taps, pad-mounted	1040 5/2/74	To obtain experience.
*GCCL-P Series, single and three-phase, pad-mounted	1047 8/8/74	To obtain experience.
<u>Elliott</u>		
Type EPMR, single and three-phase, pad-mounted	993 (6/8/72) 1007 (1/4/73) 1009 (2/1/73) 1010 (2/15/73)	To obtain experience.
<u>Powercon</u>		
Type PMF, single-phase pad-mounted	981 12/16/71	To obtain experience.
Type PMF-8.3, three-phase pad-mounted	998 8/17/72	
<u>Inter-Alloys</u>		
Uni-Versal single- and three-phase pad-mount fusible switchgear and loadbreak switches Series UV-FL	1133 2/16/78	To obtain experience.

\*Furnished with current limiting fuses.

NOTE 1: Enclosures on this page must comply with the dead-front requirements of REA Spec. U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
	<u>7.2/12.5 kV</u>	
<u>McGraw-Edison</u> EH3A Series, single- phase, pad-mounted	1065 5/15/75	To obtain experience.
<u>Malton</u> MEF21	1108 2/17/77	To obtain experience.
<u>S &amp; C</u> Mark III, Models PMS (with option G-7) 200 ampere three-pole switching and 200 ampere single-pole switching	1112 4/14/77 1198 10/23/80 1202 12/18/80	To obtain experience.
<u>Westinghouse</u> UTE, PAD-PAK pad-mounted switching device, single and three-phase, 300 amp	1151 11/16/78	To obtain experience.
<u>G &amp; W</u> PLDR, PFLDR (submersible and pad-mounted) single-phase and three-phase, fused or unfused switchgear. (Choice of deep well or deadbreak bushings) (must specify pentahead security bolt when ordering)	1200 11/20/80	To obtain experience

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

Conditional List  
U he(2)  
July 1984

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
	<u>14.4/24.9 kV</u>	
<u>Elliott</u> Type EPMR, single- and three-phase, pad-mounted	1030 11/21/73	To obtain experience.
<u>Powercon</u> Type PMF, single-phase pad-mounted Type PMF, three-phase pad-mounted	998 8/17/72	To obtain experience.
<u>RTE</u> Type LBS, single- and three-phase, pad- mounted, 300 amp	1095 8/11/76	To obtain experience.
<u>Inter-Alloys</u> Uni-Versal single- and three-phase pad-mount fusible switchgear and loadbreak switches Series UV-FL	1133 2/16/78	To obtain experience.
<u>Westinghouse</u> UTE, PAD-PAK pad-mounted switching device, single and three-phase, 200 amp	1151 11/16/78	To obtain experience.

NOTE 1: Enclosures on this page must comply with the dead-front requirements of REA Specification U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferreresonance. Refer to REA Bulletin 61-3.

U he - Enclosures, Sectionalizing Equipment

<u>Manufacturer</u>	<u>Meeting No. and Date</u> <u>14.4/24.9 kV</u>	<u>Conditions</u>
<u>G &amp; W</u> PLDR, PFLDR (submersible and pad-mounted) single-phase and three-phase, fused or unfused switchgear (Choice of deep well or deadbreak bushings) (must specify pentahead security bolt when ordering)	1200 11/20/80	To obtain experience

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Specification U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.



Conditional List  
U he(3)  
July 1984

U he - Enclosures, Sectionalizing Equipment  
(600 amp)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>S &amp; C</u>		
Mark III, Model PMH (with option G-7) 15-25 kV, 600 amp., three-phase switching and 200 amp. single-pole switching	1112(4/14/77) 1198(10/23/80) 1202(12/18/80)	To obtain experience.
Fully enclosed live parts at all times, Model PME-15-25 kV, three-phase switching and 200 amp single pole switching	1254(3/3/83)	To obtain experience.
<u>RTE</u>		
Type LBS, single-and three- phase, pad-mounted 15 kV	1095 8/11/76	To obtain experience.
<u>Trayer</u>		
800 Series, pad-mounted three-phase vacuum switching equipment, 200 and 600 amps., 15-25 kV with or without fusing	1160 3/29/79	To obtain experience.
501 submersible vacuum fuse enclosure, deadfront 200 or 600 amp., 15-25 kV	1160 3/29/79	
Type SSA (submersible, fused and unfused) 200 and 600 amp., 15-25 kV	1034 1/31/74	
<u>Chance</u>		
Type LVS (submersible and pad- mounted) single-phase and three-phase, vacuum switching equipment, fused or unfused, 200 or 600 amp., 15-25 kV	1074(9/25/75) 1108(2/17/77) 1202(12/18/80) 1211(4/30/81)	To obtain experience.
<u>Electrical Equipment</u>		
Type PSI 15 kV, 25 kV 600 amp., three-phase switching, and 200 amp., single-phase switching. (when ordering, add suffix B-3)	1196 9/18/80	To obtain experience.

- NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Specification U-4.
- NOTE 2: Single-phase switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.



U he - Enclosures, Sectionalizing Equipment  
(600 amp.)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Joslyn</u> Type SG6 (submersible) three-phase switching equipment, 600 amp., 15 or 25 kV	1112 4/14/77	To obtain experience
<u>Kearney</u> Series QE, QEE, QEI (all with option D1) pad-mounted 15 kV, 600 amp three-phase switching and 200 amp single pole switching	1184 4/10/80	To obtain experience.
Series VE - pad-mounted, 15 kV and 25kV, single phase and three-phase vacuum switching, fused or unfused 200 or 600 amps	1184 4/10/80	To obtain experience.
Series VP - submersible, single phase and three- phase, vacuum switching, 200 or 600 amp, 15 and 25 kV, with or without VACOP remote operator	1184 4/10/80	To obtain experience.
General Electric Series PSB (pad-mounted) and SSB (submersible) three-phase switching equipment, 200 or 600 amp., 15 or 27 kV	1022 8/2/73	To obtain experience.

Note 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

Note 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U hg  
July 1984

U hg - Anti-tamper Shield

Manufacturer

Catalog No.

Formed Plastics

7262 Series

McGraw-Edison

UM8Y1

Sonoco

S24 Series

U hj  
July 1984

U hj - Bracket, combination arrester,  
cutout and pothead mounting

Applicable drawing: UM2, UM2A, UM4

<u>Manufacturer</u>	<u>Single Phase</u>	<u>Three Phase</u>
Aluma-Form	1HCA-18-1PB Series	---
McGraw-Edison	DC51B1 *DC67B1	DC52B1 *DC67B1

\*Plate for adapting to intermediate arrester mounting.

Conditional List  
U hp(1)  
July 1984

U hp - Terminations, Elbow\*

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Burndy</u>		
15 kV, Loadbreak		
LBT 112 (without test point)	1144	To obtain experience.
LBT 112-T (with test point)	8/3/78	
25 kV, Loadbreak	1211	
LBT 262M (without test point)	4/30/81	
LBT 262TM (With test point)		
25 kV, Non-Loadbreak		
DBT 252T (with test point)		
<u>Elastimold (ESNA)</u>		
15 kV	945	To obtain experience.
Style 154-LR (non-loadbreak with voltage test point)	6/11/70	
Style 163-LR (Loadbreak without voltage test point)		
Style 164-LR (Loadbreak with voltage test point)		
25 kV	945	
Style K-154-LR (non-loadbreak with voltage test point)	6/11/70	
Style 271-LR (Loadbreak without voltage test point)	1068	
Style 272-LR (Loadbreak with voltage test point)	6/26/75	
35 kV		
Style 354-LR (non-loadbreak with voltage test point)	1064	
	5/1/75	

\*NOTE: Non-loadbreak devices require that connections be made in non-energized conditions only.

For application of loadbreak elbows on three-phase systems, refer to  
REA Bulletin 61-15 dated June 1974.

## U hp - Terminations, Elbow\*

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>General Electric</u>		
15 kV, Loadbreak	930	To obtain experience.
Elbow connector module	10/30/69	
9U01 Series		
25 kV	1016	
9U01BAA Series (Loadbreak	5/10/73	
with voltage test point)		
9U01BBA Series (Loadbreak		
without voltage test point)		
<u>ITT Blackburn</u>		
15 kV, Loadbreak	981(12/16/71)	To obtain experience.
T2B (without test		
point)		
T2BT (with test point)	981(12/16/71)	
15 kV, Non-loadbreak	1037	
TN2BT (with test point)	3/21/74	
25 kV, Non-loadbreak		
T2CT (with test point)		
TN2CT (with test point)		

\*NOTE: Non-loadbreak devices require that connections be made in non-energized conditions only.

For application of loadbreak elbows on three-phase systems, refer to  
REA Bulletin 61-15 dated June 1974.

Conditional List

U hp(3)

July 1984

U hp - Terminations, Elbow\*

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
RTE		
15 kV Loadbreak SBT IV	1122	To obtain experience.
2604000B Series with test point	9/8/77	
2603999B Series without test point		
15 kV Non-loadbreak	1148	
2625166B Series	9/28/78	
2625175B Series		
2525175B Series		
25 kV Loadbreak SBT	1032	
2604381B Series with test point	12/20/73	
2604400B Series without test point		
35 kV Loadbreak SBT	1048	
2603922B Series with test point	8/22/74	
2604006B Series without test point		

\*NOTE: Non-loadbreak devices require that connections be made in non-energized conditions only.

For application of loadbreak elbows on three-phase systems,  
refer to REA Bulletin 61-15 dated June 1974.



U hp - Terminations, Elbow  
(rated for switching on three-phase systems)

(when ordering, specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Kearney</u>		
15 kV, Loadbreak with voltage test point 1115-FC Series	1005 12/7/72 1077 11/13/75	To obtain experience.
<u>RTE</u>		
15 kV, Loadbreak SBT IV 2604600B Series with test point 2604599B Series without test point	1032 12/20/73  1122 9/8/77	To obtain experience.
25 kV, Loadbreak SBT 2604740B Series with test point 2604741B Series without test point	1148 9/28/78	
<u>Elastimold (ESNA)</u>		
15 kV, Loadbreak without voltage test point Style 165-LR	1068 6/26/75	To obtain experience.
15 kV, Loadbreak with voltage test point Style 166-LR		
25 kV, Loadbreak without voltage test point Style 271-LR		
25 kV, Loadbreak with voltage test point Style 272-LR		
<u>General Electric</u>		
15 kV, Loadbreak 9U01A--4-- Series	1133 2/16/78	To obtain experience.
25 kV, Loadbreak 9U01B--5-- Series		
<u>ITT Blackburn</u>		
15 kV, Loadbreak JT2B (without test point)	1054 11/27/74	To obtain experience.



## Conditional List

U hp(5)

July 1984

U hp - Terminations, Elbow  
(rated for switching on three-phase systems)

(when ordering, specify conductor size, type, whether copper or  
aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Burndy</u>		
15 kV, Loadbreak		
LBT112M (without test point)	1162(4/26/79)	To obtain experience.
LBT112MT (with test point)	1165(6/7/79)	
25 kV, Loadbreak		
LBT262M (without test point)	1240	To obtain experience.
LBT262TM (with test point)	8/12/82	
15 kV, Fused Loadbreak		
SPF-T (with test point)	1251 1/20/83	To obtain experience.

July 1984

## U hq - Terminations, Multipoint

## Use with Loadbreak Connectors

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u>		
15 kV		
2-way bushing, 163J2*	1068 (6/26/75)	To obtain experience.
3-way bushing, 163J3*	1068 (6/26/75)	
3-way bushing, 1601-J3	921 (6/26/69)	
4-way bushing, 163J4*	1068 (6/26/75)	
4-way bushing, 1601-J4	945 (6/11/70)	
 <u>RTE</u>		
LBC-2, 2-way bushing, 15 kV	924	To obtain experience.
2600730C04 - single phase	8/7/66	
2604883B01 - three phase		
LBC-3, 3-way bushing, 15 kV	1126	
2600730C08 - single phase	11/3/77	
2604883B02 - three phase		
LBC-4, 4-way bushing, 15 kV		
2600730C12 - single phase		
2604883B03 - three phase		
LBC-2, 2-way bushing, 25 kV	1148	
2604954B01 - three phase	9/28/78	
LBC-3, 3-way bushing, 25 kV		
2604954B02 - three phase		
LBC-4, 4-way bushing, 25 kV		
260495B03 - three phase		
 <u>General Electric</u>		
15 kV*		
2-way bushing 9U07A--2-0	1131	To obtain experience.
3-way bushing 9U07A--3-0	1/19/78	
4-way bushing 9U07A--4-0	1158 (3/1/79)	
25 kV*	1016	
2-way bushing 9U07B--2-0	5/10/73	
3-way bushing 9U07B--3-0	1158	
4-way bushing 9U07B--4-0	3/1/79	
 <u>ITT Blackburn</u>		
J2BA (2, 3, 4-way) 15 kV	1110	To obtain experience.
JJ2BA* (2, 3, 4-way) 15 kV	3/17/77	

\*NOTE: Asterisk indicates single or three phase. Other terminations for  
use with loadbreak connectors are single phase only.

## Conditional List

U hq(3)

July 1984

## U hq - Terminations, Multipoint

Use With Non-loadbreak Connectors

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u>		
Style 150-T, T-Tap (15 kV)	873 7/27/67	To obtain experience
Style K-150-T, T-Tap (25 kV)	921 6/26/69	
271J2, 2-way bushing, 25 kV	1199	To obtain experience
271J3, 3-way bushing, 25 kV	11/6/80	
271J4, 4-way bushing, 25 kV		
<u>ITT Blackburn</u>		
J2CA (2, 3, 4-way) 25 kV	1110 3/17/77	To obtain experience
<u>RTE</u>		
VBJ-2, 2-way bushing, 15 kV, 2604670B01	1126 11/3/77	To obtain experience
VBJ-3, 3-way bushing, 15 kV, 2604670B02		
VBJ-4, 4-way bushing, 15 kV, 2604670B03		

U hr  
July 1984

U hr - Secondary tap or splice cover, submersible

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
Bishop	Splice-Wrap
Blackburn	Type DBS
Elastimold (ESNA)	Style 86
Electrical Spec. Prod.	TSC Series
Homac	FSS Series
Kearney	Aqua-Seal Kit
3M	PST Series 8400
RTE	Aqua-Guard

Heat Shrink Tubing (with sealant throughout)

<u>Manufacturer</u>	<u>Type or Catalog No.</u>
AMP	Black heat-shrink tubing
Electrical Spec. Prod.	HSB
Panduit	Heat shrink insulating cover
Raychem	WCS cable sleeves
Sigmaform Corporation	Sigmaform heat-shrinkable products



U hv - Cable, Underground  
25 kV Cable

Applicable Specification:	REA Specification U-1
Conductor	Copper or Aluminum
	#2 AWG through 1000 kcmil
Insulation	High Molecular Weight (HMW) or cross-linked (XL) polyethylene, or Ethylene Propylene Rubber (EPR)
Neutral	Copper Concentric Neutral

<u>Manufacturer</u>	<u>Insulation</u>	<u>Flat Strap Neutral Available</u>	<u>Stabilized Neutral Design*</u>
Anaconda Ericsson	XL	No	
Cablec	XL	Yes	
Conductor Prod.	HMW or XL	Yes	Ridg- lok
Essex	XL	Yes	
Hendrix	HMW or XL	No	Neu- lok
Okonite	XL or EPR	Yes	
Pirelli	HMW or XL	Yes	STA-SERVE
Reynolds	HMW or XL	Yes	Secure-Ne utral
Rome	HMW or XL	Yes	Serve- lock Counter-Secure
Southwire	XL	No	

\*Accepted design meeting the requirements of 7.5.2. of REA Specification U-1, for a minimum neutral with a maximum lay.

U hv-3  
July 1984

U hv - Cable, Underground

600 Volt Cable

Applicable Specification: REA Specification U-2  
Conductor : Copper, #4 AWG and larger  
Aluminum, #2 AWG and larger  
Insulation : Cross-linked polyethylene (XLPE)

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Anaconda Ericsson	Copper or Aluminum
Cablec	Copper or Aluminum
Collyer	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Hatfield	Copper
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phelps Dodge	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

NOTE: The manufacturers shown above have indicated that their 600 volt cable is suitable for use on 480 volt corner grounded delta circuits.

The above cable may be supplied with UL label for Type USE.



U hv - Cable, Underground

600 Volt Multi-Conductor Cable

Applicable Specification: REA Specification U-2  
Conductor : Copper, #4 AWG and larger  
Aluminum, #2 AWG and larger  
Insulation : Cross-linked polyethylene (XLPE)  
Cable Configuration : 3 Insulated Conductors Triplexed

<u>Manufacturer</u>	<u>Type Conductor</u>
Alcan	Copper or Aluminum
Anaconda Ericsson	Copper or Aluminum
Conductor Products	Aluminum
Essex	Copper or Aluminum
General Electric	Copper or Aluminum
Hatfield	Copper
Kaiser	Aluminum
Okonite	Copper or Aluminum
Phillips Cables, Inc. (Marked "Phillips W")	Copper or Aluminum
Pirelli	Copper or Aluminum
Reynolds	Copper or Aluminum
Rome Cable	Copper or Aluminum
Southwire	Copper or Aluminum

NOTE: The above cable may be supplied with UL label for Type USE.

U hv-5  
July 1984

U hv - Cable, Underground  
15 kV and 25 kV Concentric Neutral Jacketed Cable

Applicable Specification : REA Specification U-1  
Conductor : Copper or Aluminum  
                              : #2 AWG through 1000 kcmil  
Insulation : High Molecular Weight (HMW) or Cross Linked (XL)  
                              Polyethylene or Ethylene Propylene Rubber (EPR)  
Neutral : Copper Concentric Neutral  
Jacket : High Molecular Weight (HMW) Polyethylene

Manufacturer

Okonite

Insulation

XL or EPR

NOTE: For grounding purposes, insulated jacketed cables must be treated like overhead lines, i.e., at least four ground rods must be installed per mile in accordance with the NESC. (This does not include service grounds, etc., but does include equipment grounds.) Additional grounding may be necessary in soils with higher resistivity. In splices or tap connections, a good seal should be achieved to exclude moisture.

It is recommended that any place the jacketing is cut (including the connections to ground rods), it be done aboveground in a pedestal.

U hv - Cable, Underground  
(15 or 25 kV cable)TREE RETARDANT

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Conductor Products</u> DFDA 6202 HMW	1148(9/28/78) 1198(10/23/80) 1274(1/9/84)	To obtain experience
<u>Essex</u> DFDA-6202 HMW	1236(6/10/82)	To obtain experience
<u>Hendrix</u> DFDA 6202 HMW	1151(11/16/78) 1198(10/23/80)	To obtain experience
HFDE-4202(XL)	1281(5/31/84)	To obtain experience
<u>Pirelli</u> DFDA-6202 HMW	1152(12/7/78) 1202(12/18/80)	To obtain experience
<u>Reynolds</u> Reynotree-U (DFDA-6202 HMW)	1151(11/16/78) 1196(9/18/80) 1255(3/24/83)	To obtain experience
HEFD-4202 (XL)	1258(5/5/83)	
<u>Rockbestos Company</u> HFDA-4202 (XL)	1279(5/31/84)	To obtain experience
<u>Rome Cable</u> UCAR TR-7521 LLDHWM UCAR TR-4202 XL	1271(12/15/83) 1279(5/3/84)	To obtain experience

U hw  
July 1984

U hw - Warning sign

Applicable Specifications: REA Drawings UM12-1 and UM12-2

<u>Manufacturer</u>	<u>Size (inches)</u>	<u>Danger Sign Catalog No.</u>	<u>Caution Sign Catalog No.</u>
Brady*	7 x 10	46133	46043
	10 x 14	46131	46041
Dun-Lap*	7 x 10	DL-D710	DL-C710
	10 x 14	DL-D1014	DL-C1014
	14 x 20	DL-D1420	DL-C1420
	20 x 28	DL-D2028	DL-C2028
Eastern Metal*	7 x 10	REA 12-1-710	REA 12-2-710
	10 x 14	REA 12-1-1014	REA 12-2-1014
	14 x 20	REA 12-1-1420	REA 12-2-1420
	20 x 28	REA 12-1-2028	REA 12-2-2028
Lyle*	7 x 10	UM12-1-710	UM12-2-710
	10 x 14	UM12-1-1014	UM12-2-1014
	14 x 20	UM12-1-1420	UM12-2-1420
	20 x 28	UM12-1-2028	UM12-2-2028
May Advertising	7 x 10	MY710C	MY710B
	10 x 14	MY1014C	MY1014B
	14 x 20	MY1420C	MY1420B
	20 x 28	MY2028C	MY2028B
For pressure sensitive decal add "D" prefix to catalog number.			
Truck Sign Service*	7 x 10	TSD-710	TSC-710
	10 x 14	TSD-1014	TSC-1014
	14 x 20	TSD-1420	TSC-1420
	20 x 28	TSD-2028	TSC-2028
Lem	7 x 10	LSS-1400	LSS-1500
	10 x 14	LSS-1401	LSS-1501
	14 x 20	LSS-1402	LSS-1502

U hx - Cable Route Marker

Manufacturer

Catalog No.

Surface Mounted

Chance

C554-0001

Above Grade

Carsonite

REA-100

Chance

C554-0183

Dun-Lap

DL-R45  
DL-R712

Lyle

UM12-712

May Advertising

MY45A  
MY712A

For pressure sensitive decal add "D" prefix to catalog number.

Truck Sign Service

BCW-712

Conditional List  
U hy(1)  
July 1984

U  
Ju

U hy - Splice, Underground, Permanent

(when ordering, specify conductor size, type, whether copper or  
aluminum and insulation diameter)

A  
(

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>AMP</u> "Ampace Splice" (35 kV)	1126(11/3/77)	To obtain experience.
<u>Elastimold (ESNA)</u> Style 1500S, straight splice, through #1/0 (15 kV)	1135(3/23/78)	To obtain experience.
Style 25-S, straight splice, #2/0 through #4/0 (15 kV)	1135(3/23/78) 873(7/27/67)	
Style 25-Y, Y-splice (15 kV)	921(6/26/69)	
Style K-25-S, straight splice (25 kV)		
Style K-25-Y, Y-splice (25 kV)		
Style M-250-S, straight splice (35 kV)	1134(3/2/78)	
<u>Burndy</u> Type FMS152 Straight Splice (15 kV) #4 through #1/0	1251(1/20/83)	To obtain experience.
<u>ITT Blackburn</u> Type S4B (15 kV) Type S4C (25 kV)	1160 3/29/79	To obtain experience.
<u>3M</u> Quick Splice II 5411, 5412 (15 kV) (#2 Awg thru #4/0 Awg)	1194(9/4/80)	To obtain experience.
"Quick Splice" 5400 Series (15 kV) (250 kcmil thru 750) 5420 Series (25 kV)	969(6/17/71) 1024(8/30/73) 1032(12/20/73)	



U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>General Electric</u>		
15 kV Straight Splice through #1/0, Model 9U16A_100 (15 kV)	1255 3/24/83	To obtain experience.
"Uni-Matic" #2/0, Model 9U06A (15 kV)	977 10/14/79	
"Uni-Matic" through #2/0, Model 9U06A (25 kV)	977 10/14/79	
<u>Raychem</u>		
HVS 1510-R 200 Amp splice kit	1275 3/1/84	To obtain experience.
<u>RTE</u>		
15 kV - 2606780A Series straight splice	1122 9/8/77	To obtain experience.
25 kV - 2606825A Series straight splice		
35 kV - 2603934B Series straight splice	1058 2/6/75	
<u>Somerset</u>		
Straight splices		
Style 15 DHS (15 kV)	1014	To obtain experience.
Style 25 DHS (25 kV)	4/12/73	
Style 35 DHS (35 kV)		



Conditional List

U hy(2)

July 1984

U hy - Splice, Underground, Separable

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u>		
Style 151-SR, receptacle (15 kV)	921 6/26/69	To obtain experience.
Style 151-SP, plug (15 kV)		
Style K-151-SR, receptacle (25 kV)		
Style K-151-SP, plug (25 kV)		

U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether  
copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Elastimold (ESNA)</u>		
Style 650-S, straight splice (15 kV)	1016 5/10/73	To obtain experience.
Style 650-Y, Y-Splice (15 kV)		
Style K650-S, straight splice (25 kV)		
Style K650-Y, Y-splice (25 kV)		
Style M650S, straight splice (35 kV)	1064 5/1/75	To obtain experience.
<u>ITT Blackburn</u>		
15 kV - S65B straight splice	1131	To obtain experience.
25 kV - S65C straight splice	1/19/78	
<u>RTE</u>		
15 kV - 2604904B Series straight splice (MPS-600)	1122 9/8/77	To obtain experience.
25 kV - 2604905B Series straight splice (MPS-600)		

Conditional List  
U ja(1)  
July 1984

U ja - Transformer Pad

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Associated Plastics</u> API 4000 Series RPM	1191 7/24/80 1194 9/4/80	To obtain experience.
<u>Carolina Dielectrics</u> Model 0502-1 Fiberglass Size: 40" x 44"	1000 9/14/72	To obtain experience.
<u>Chance</u> C107-0162 and C107-0171 Fiberglass Size: 40" x 44"	994 6/29/72	To obtain experience.
<u>Cyclo</u> Dwg. No. 730126-2 Molded polyethylene Size: 42" x 42"	1147 9/14/78	To obtain experience.
<u>Heil Rotomold, Inc.</u> T Series* High density polyethylene	1228 2/4/82	To obtain experience.
<u>Highline</u> HL-46B, Fiberglass Size: approx. 42" x 42"	989 4/13/72	To obtain experience.
<u>Plastic Structures</u> No. 40402012 Molded polyethylene Size: 40" x 40"	997 7/27/72	To obtain experience.
<u>Quazite Corp.</u> Composolite - PH Series	1141 6/15/78 1267 10/13/83	To obtain experience.
<u>Thermodynamics</u> Poly-Pad, PR Series* Molded polyethylene	998 8/17/72 1009 2/1/73	To obtain experience.

\*Order by catalog number and size.

## U ja - Transformer Pad

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Power Line Hardware</u>		
T-4242	1158	To obtain experience.
Molded polyethylene	3/1/79	
Size: 42" x 42"		
<u>Formex</u>		
Model TP-REA	1159	To obtain experience.
Molded polyethylene	3/15/79	
<u>Major Frame-Crete</u>		
ETPP precast	1166	To obtain experience.
cellular concrete	6/21/79	
42" x 42"		
<u>Smith Cattleguard</u>		
Easi Set T. Series	1187	To obtain experience
Precast Reinforced	5/22/80	
Concrete		
<u>Nordic</u>		
TP series	1255	To obtain experience.
Fiberglass	3/24/83	

U ja - Transformer Pad (Sleeve)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Associated Plastics</u>		
Transformer pad and box assembly, API 4242 RPM Pad	1194 9/4/80	To obtain experience.
1730 Box API 16, API 45	1259 5/19/83	
<u>Concast</u>		
Fibercrete modular bases	1125 10/21/77	To obtain experience.
<u>Continental Columbus</u>		
CW-GS-P Series	1164 5/24/79	To obtain experience.
<u>Electri-Glass, Inc.</u>		
BP-2000	1164 5/24/79	To obtain experience.
<u>Formex</u>		
Transformer pad and box assembly	1164 5/24/79	To obtain experience.
TP-REA Series Pad		
1730-A Series Box		
<u>Highline</u>		
Box pad HL-45A	1002	To obtain experience.
Size: L-43", W-34-1/2", D-32"	10/12/72	
<u>Nordic</u>		
GS Series	1255	To obtain experience.
Fiberglass	3/24/83	

\*Order by catalog number and size.

U jb - Splice Shield  
(Refer to Drawing UM45-4)

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Kellems</u> No. SE 594-2	1035 2/21/74	To obtain experience.

Conditional List

U sc

July 1984

U sc - Regulators, voltage, pad-mounted  
for underground distribution

7.2/12.5 kV

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Siemens-Allis</u> Single-phase, step-type pad-mounted regulator Type PFR (76.2, 114.3 & 167 kVA)	994 6/29/72	To obtain experience.



U sd - Current Transformers  
600 volt

Direct Burial Type

Manufacturer

General Electric

Type or Catalog No.

JAL-O

Indoor Type for Pad-Mounted Transformers

Manufacturer

Astra

General Electric

Westinghouse

Type or Catalog No.

AP

JAB-O

CMV

Conditional List  
U sd  
July 1984

U sd - Current Transformers

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Sangamo</u> Current transformers, direct burial, 600 v. Type KU-6 Type K2U-6 Type GU-6 Type HU-6	940 4/2/70	To obtain experience.

U si - Anodes, Sacrificial  
(Drawings UM11-1, UM-26, UM27, M2-7)

Zinc Anodes\*

	<u>Pre-Packaged With Connecting Wire</u>			<u>Bare Continuous Strip (Ribbon)</u>	
	<u>12 lbs</u>	<u>30 lbs</u>	<u>60 lbs</u>	<u>5/8" x 7/8"</u>	<u>1/2" x 3/16"</u>
Federated Metals	S-12 packaged	S-30 packaged	S-60 packaged	Regular size Type II	Junior size
Harco	AZC12GJ	AZC30GJ	AZC60HJ		
General Corrosion Service	12HII-4A	30HII-4A	60HII-4A		

\*When ordering, specify zinc anodes that meet ASTM B418-73 Type II Composition and REA Specification DT-9, "REA Specification for Zinc Sacrificial Anodes."

U si-2  
July 1984

U si - Anodes, Sacrificial  
(Drawings UM-11-1, UM-26, UM-27, M2-7)

Magnesium Anodes\*\*

	<u>Standard Potential</u>				<u>High Potential</u>			
	<u>17 lbs.</u>	<u>20 lbs.</u>	<u>32 lbs.</u>	<u>50 lbs.</u>	<u>17 lbs.</u>	<u>20 lbs.</u>	<u>32 lbs.</u>	<u>48 lbs.</u>
Federated Metals	17 packaged		32 packaged	50 packaged				
Harco	AMC17J	AMC20J	AMC32J	AMC50J	AMC17G	AMC20G	AMC32G	AMC48G
Kaiser Mag.	17 Vibra Pak		32 Vibra Pak	50 Vibra Pak	17 Electromag Vibra Pak		32 Electromag Vibra Pak	50 Electromag Vibra Pak
General Corrosion Services	17 packaged		32 packaged	50 packaged	17D3 packaged	20D2 packaged	32D5 packaged	48D5 packaged

\*\*When ordering, specify magnesium anodes that meet REA Specification DT-10,  
"REA Specification for Magnesium Sacrificial Anodes."

### PART III - GENERAL PLANT ITEMS

#### Explanation of Groups

- Group I      Instruments in this classification are laboratory or shop standards, used for calibrating all other instruments. They are a precision type which demand the best of care. THEY ARE NOT FOR FIELD USE.
- Group II     Instruments in this classification are high accuracy weather-proof portables, used for general field testing such as checking substations, voltage regulators or control equipment.
- Group III    Instruments in this classification are weatherproof portables or semi-portables of the thermal type, used for checking substation balance, substation loading, transformer loading, feeder loading, feeder voltages and many consumer loads.
- Group IV     Instruments in this classification are general purpose weather-proof portables with moderate accuracy, used for checking consumer loads and used where only moderate accuracy is required.

AMMETERS, INDICATING

	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Biddle	50,000 Series	Thermal, max. pointer	III
General Electric	AK-4	Hook-on (volt-ammeter)	IV
	AK-5	Hook-on (volt-ammeter)	IV
HD Electric	"Max-I-Meter" (All models)	Thermal ammeters	III
Multi-Amp	115	Volt-Amp-Wattmeter	II
	125	Volt-Ammeter	II
	135	Portable, general field testing	II
Sangamo	ADS	Thermal, max. pointer, socket mount	III
	ADN	Thermal, max. pointer, neutral connected	III
TIF Instruments	PP1000	Hook-on (volt-ammeter)	IV
Westinghouse	PA-141	Volt-Ammeter	II
	PA-151	Volt-Ammeter	II
	PA-161	Volt-Ammeter	II
Weston	370	Reference portable standard	I
	433	Portable, general field testing	II
	633	Hook-on (volt-ammeter)	IV
	904	Portable, general field testing	II

\* Refer to "Part III - General Plant Items" for explanation of groups.

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## AMMETERS, RECORDING

	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Esterline-Angus	A	Ink, strip, motor or clock, portable	II
General Electric	CH-3	Ink, strip, motor or clock, portable	II
	CH-4	clock, portable	IV
	CH-7	Ink, strip, motor or clock, portable, with 15 kV CT	IV
	CF-1	Inkless, strip, motor drive, portable	IV
	CF-7	Inkless, strip, motor drive, portable, with 15 kV CT	IV
Sangamo	CCAO	Thermal, ink, circular motor or clock, portable, pole or socket mount	III
Westinghouse	44	Ink, strip, motor or clock, portable	II
	45	Ink, circular, motor or clock, portable	IV

\* Refer to "Part III - General Plant Items" for explanation of groups.



July 1984

## VOLTMETERS, INDICATING

<u>Manufacturer</u>	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Multi-Amp	145	Portable, general field testing	II
Sangamo	V2S V4S	Thermal, Min-Max pointers, socket mount	III
Westinghouse	PA-141	Volt-Ammeter	II
	PC-141	Portable, general field testing	II
	PA-151	Volt-Ammeter	II
	PC-151	Portable, general field testing	II
	PA-161	Volt-Ammeter	II
	PC-161	Portable, general field testing	II
Weston	341	Reference portable standard	I
	433	Portable, general field testing	II
	904	Portable, general field testing	II

\*Refer to "Part III - General Plant Items" for explanation of groups.

VOLTMETERS, RECORDING

	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Esterline-Angus	A	Ink, strip, motor or clock, portable	II
General Electric	CH-3	Ink, strip, motor, clock, portable, single range	II
	CH-3	Ink, strip, motor or clock, portable, expanded range	II
	CH-4	Ink, strip, motor or clock, portable, multi-range	II
	CF-1	Inkless, strip, motor drive, portable	IV
Sangamo	CCVO	Thermal, ink, circular, motor or clock, portable, pole or socket mount	III
Westinghouse	44	Ink, strip, motor or clock, portable	II
	45	Ink, circular, motor or clock, portable	IV

\*Refer to Part III - General Plant Items for explanation of groups.

WATTMETERS, INDICATING

	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Multi-Amp	155	Portable, general field testing	II
Sangamo	WDS	Thermal, max. pointer, socket mount	III
Westinghouse	PY-5	Portable, general field testing	II
Weston	432	Portable, general field testing	II
	310	Portable, standard	II
	905	Portable, general field testing	II

WATTMETERS, RECORDING

Esterline-Angus	A	Ink, strip, motor or clock, portable	II
General Electric	CF-8	1Ø watt-var, inkless, strip, motor, portable	IV
	CH-3 CH-4	Ink, strip, motor or clock, portable	II
Sangamo	CCWO	Thermal, ink, circular, motor or clock, portable, pole or socket mount	III
Westinghouse	44	Ink, strip, motor or clock, portable	II

\*Refer to Part III - General Plant Items for explanation of groups.

WATTMETERS, RECORDING

	<u>Meeting No. and Date</u>	<u>Conditions</u>
General Electric	851 10/13/66	To obtain operating experience.
<u>Type</u>	<u>Description</u>	<u>Group*</u>
CH-11	3 $\phi$ watt-var recorder, ink or inkless, portable, motor or clock	II
CF-11	3 $\phi$ watt-var recorder, inkless, portable, motor	IV

\*Refer to Part III - General Plant Items for explanation of groups.

GP-6  
July 1984

WATTHOUR METER TEST SETS  
AND ROTATING STANDARDS

	<u>Instrument</u>	<u>Type or Model</u>	<u>Group*</u>
Eastern Specialty	Current transformer field test kit	1012	II
	Meter test board	990A	I
	Meter test kit	G-50	II
General Electric	Portable standard	IB-10	II
Knopp, Inc.	Loading transformer	CL-6	II
	Watthour meter testing equipment	TE-14	I
Sangamo	Portable standard	J-33	II
		J-44	II
States Company	Watthour meter test table	HAPBL	I
	Photoelectric watthour meter tester	150	I
	Meter test kit	KFLD	II
	Demand meter test table	FDM	I

\* Refer to "Part III - General Plant Items" for explanation of groups.

Conditional List  
GP(6)  
July 1984

GP - Watthour Meter Test Sets

<u>Manufacturer</u>	<u>Meeting No. and Date</u>	<u>Conditions</u>
<u>Knopp, Inc.</u> "Uniload" Portable Test Set FS-8	1005 12/7/72	To obtain experience.

RESISTANCE TESTS SETS

	<u>Type</u>	<u>Description</u>	<u>Group*</u>
Associated Research	255A	Ground resistance	IV
	263A	meter (vibroground)	IV
	2101A	Ohmmeter, insulation resistance tester	IV
Biddle	21159	Ohmmeter, insulation resistance tester	IV

\*Refer to "Part III - General Plant Items" for explanation of groups.



GP-8

July 1984

\*DC Voltmeter with Built-In Half Cell

<u>Manufacturer</u>	<u>Type</u>	<u>Description</u>
Electronics Systems Design	CP600	Corrosion Potential Meter (0 to 1.999 volts dc digital)

\*Corrosion test instrument - DC potential





